JUNE, 1910. Vol. LIV. No. 388

JOURNAL

OF THE

Royal United Service Institution.

14 NOV 1914
975

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PUBLISHED UNDER THE AUTHORITY OF THE COUNCIL.

Editor - Captain H. Garbett, R.N. (Retired).

All communications (except those for perusal by the Editor only) to be addressed to the Secretary, Royal United Service Institution.

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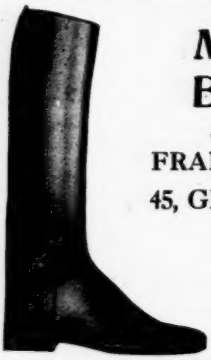

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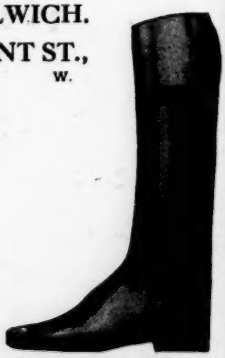

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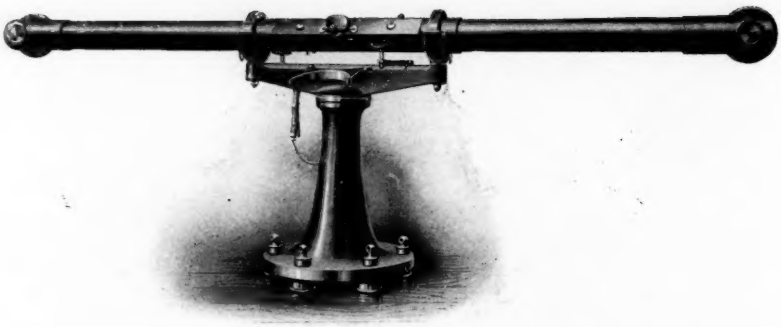

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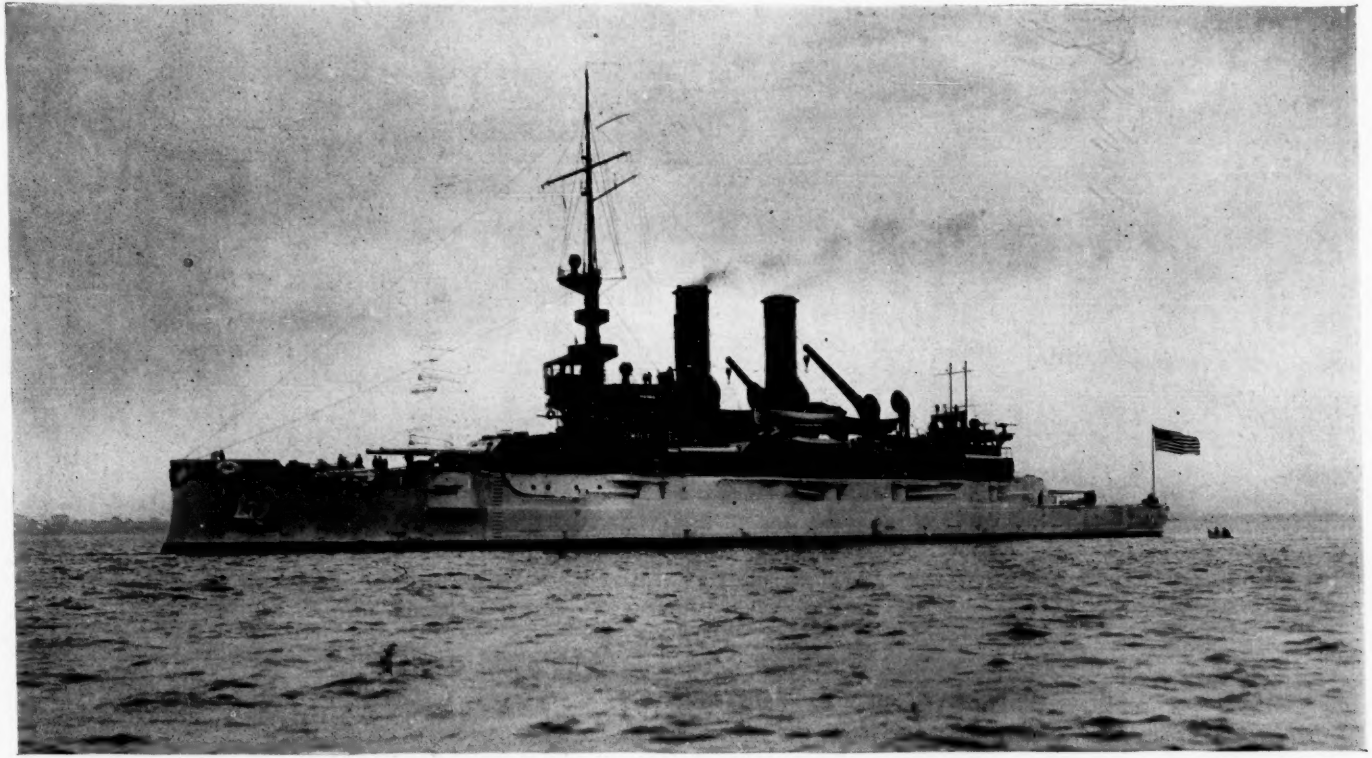
30 ,,	,,	8,000	,,
120 ,,	,,	15,000	,,
210 ,,	,,	20,000	,,

BARR AND STROUD,
ANNIESLAND,
GLASGOW.



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ARMAMENT.—Four 12-inch, mounted in pairs in turrets, fore and aft; eight 8-inch mounted in pairs in turrets at the four corners of the citadel; eight 7-inch Q.F. guns; twelve 14-pounders; six 3-pounders, and twelve machine guns, with two 21-inch submerged torpedo tubes.

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ERRATUM—MAY JOURNAL.

Page 667 line 10. For "***Poland***" read "***Pola.***"

THE JOURNAL
OF THE
ROYAL UNITED SERVICE INSTITUTION.

VOL. LIV. JUNE, 1910. No. 388.

[Authors alone are responsible for the contents of their respective Papers.]

SECRETARY'S NOTES.

I. NEW MEMBERS.

The following Officers joined the Institution during the month of May :—

Lieutenant A. R. Dewar, R.N.
Lieutenant R. H. Clark-Hall, R.N.
Major C. L. Graham, 4th Hussars.
Lieutenant H. E. Holme, R.N.
Second-Lieutenant C. M. G. Gordon-Ives, Scots Guards.
Captain H. C. Buller, Rifle Brigade.
Lieut.-Colonel Hon. F. R. Bingham, R.F.A.
Captain M. E. Lindsay, 7th Dragoon Guards.
Lieutenant F. J. Scott, 7th Dragoon Guards.
Lieutenant G. V. Kenyon, R.N.
Major P. O. Hambro, 15th Hussars.
Colonel H. Fortescue, King's Colonials Yeomanry.
Captain R. F. C. Foster, R.M.A.
Lieutenant J. F. S. Gordon, Royal Scots.
Captain C. Graham, Northamptonshire Regiment.
Lieutenant F. G. Goring, Royal Sussex Regiment.
Second-Lieutenant W. G. Campbell, Argyll and Sutherland Highlanders.
Lieutenant G. K. Gregson, R.F.A.
Captain F. A. Wynter, D.S.O., R.A.
Lieutenant J. G. Fraser, R.N.
Colonel A. C. T. Boileau, late R.A.
C. E. G. Leveson-Gower, late Lieut. Somersetshire Light Infantry.
Second-Lieutenant A. H. M. Sinclair, 2nd Life Guards.
Commander P. A. Robarts, R.N.
Lieutenant F. R. Woollcombe, R.A.
Captain G. S. Adams, Lancashire Fusiliers.
Second-Lieutenant Hon. J. St. V.B. Saumarez, Scots Guards.
Captain R. A. Cave-Browne-Cave, R.N.

In the February list Lieut.-Colonel H. B. Shawe, P.W.O., Cape Peninsular Rifles, should have been thus described.

II. LETTERS OF CONDOLENCE.

The Council, on the much lamented occasion of the death of His late Majesty King Edward VII., forwarded to His Majesty King George V. and Her Majesty Queen Alexandra, addresses of condolence from the Institution on the sad occurrence.

III. MR. S. M. MILNE.

With much regret the death is announced of Mr. Samuel Milne Milne, of Calverley House, near Leeds. The deceased was well known as a collector of military relics, badges, buttons, and books, etc., and was a recognised authority on military colours and uniforms, having compiled treatises on the subjects, and was always ready to assist officers engaged on writing regimental histories. Since it was customary for Mr. Milne to lend portions of his collections to such officers, Mrs. Milne hopes that those possessing any will now be so kind as to return them to her at the address mentioned.

IV. LIBRARY CATALOGUE AND INDEX.

The Index to the Library Catalogue has just been published and may be purchased at the price of 2s. The price of the Catalogue itself is 2s. 6d. The Catalogue and the Index will be sent post free for 4s. 6d.

V. GOLD MEDAL ESSAY SUBJECT.

The Council invite suggestions from Members for the subject of the 1911 Military Essay. They should be submitted before October, since the Council will decide on the subject in that month.

VI. ADDITIONS TO THE MUSEUM.

(6112.) Bronze Medal in commemoration of the Tercentenary of "The Founding of Quebec by Champlain."
—Given by The National Battlefields Commission, Quebec.

(6114.) A Painting in Water-colours by C. Pickering, of the Coldstream Guards in Square, 1854.

(6115.) A Painting in Water-colours by C. Pickering, of the Costume of the Army and Navy, 1854.

VII. CHANGE OF RANK OR ADDRESS.

The attention of Members is called to the necessity for communicating any change of address or rank to the Secretary. It is essential that such changes should be made in writing. If such changes be not notified, Members will themselves be responsible if their JOURNALS fail to reach them through being wrongly addressed, and Officers are requested to write their initials and names distinctly on such communications. Several signatures have recently been received which it has been quite impossible to decipher, while recently several notifications of change of address were received without signature.

VIII. ANNUAL CLEANING.

The Building will be closed for cleaning purposes from 15th August to 31st August, inclusive. The Museum will be open as usual during the period.

IX. MUSEUM, HOURS OF ADMISSION.

In future the Museum will be open to the public throughout the year, Sundays, Christmas Day and Good Friday excepted, from 10 a.m. to 5 p.m.

THE CREATION OF THE JAPANESE NATIONAL SPIRIT.

By Brevet Major Sir ALEXANDER BANNERMAN, Bart., R.E.

On Wednesday, 6th April, 1910.

Lieut-General Sir H. C. O. PLUMER, K.C.B., in the Chair.

THE late war between Russia and Japan drew the attention of the whole world to the new Power which had arisen in the Far East, and since its conclusion the libraries and newspapers have been inundated with books and articles on the Japanese character, the opinions expressed being favourable or the reverse according to the personal experience or prejudice of the writers. Much of this literature betrays great ignorance of the subject with which it is supposed to deal. It is one of the commonest delusions that the climate of Japan is delightful, and that the people live surrounded by flowers under sunny skies. As a matter of fact, the climate of Japan is not unlike our own, but it rains there nearly three times as much as in England. Poverty and hardship exist in Japan in an even greater degree than in England, although one never sees the revolting slums which disgrace London, because the houses of Japan are not lasting enough, and are usually destroyed before they reach a state of utter dilapidation.

During the war there was a tendency to regard the Japanese as demi-gods, whereas since the cessation of hostilities there has been an inclination in some quarters to fly to the other extreme. But there is one point on which perfect agreement exists amongst all those whose experience gives them the right to speak on the subject, and that is the wonderful unity of purpose to be found throughout all ranks in Japan when matters of national importance are involved. Now although this patriotic spirit is held before our eyes as an example which we ought to follow, few writers have troubled to seek out carefully the source from which it has sprung. People have been content to accept it without question, or to assign to it a mysterious origin with which the word "Bushido" is somehow connected, whereas Bushido has on the modern Japanese spirit much the same influence that the principles of

the Sermon on the Mount have at the present time in England: its effect is undoubtedly there, but even amongst those who know its words by heart, how many are there who carry its precepts into practice? A little study should convince inquirers that the rise of Japan is due to perfectly natural and simple causes.

An expression which one constantly hears is: "Japan is a nation of soldiers." This is to a certain extent true, in that every able-bodied male in Japan is now liable to military service in some form; but at the same time it is misleading, because for many centuries the privilege of bearing arms was limited to a small class only, the vast majority of the population being absolutely forbidden to carry weapons. By nature most Japanese turn more readily to art and poetry and beauty than they do to bloodshed, and it would be impossible to find in any country a population more domesticated or fonder of children than that of Japan. Although the ancient traditions of the country undoubtedly contributed very greatly to the recent victories over the Russians, it is elsewhere that we must look for the real cause of success.

One of the greatest difficulties to be encountered when trying to form an estimate of the Japanese is the absence of a standard for comparison, but although the customs of old Japan differed widely from those prevailing in England during the middle ages, there are sufficient points of resemblance to enable us to compare the military history of the two island kingdoms, and we in England may perhaps find cause for serious misgiving when we glance at the results which East and West have produced from very similar beginnings.

Let us first review briefly our own military history, which may be said to date from the departure of the Romans.

Like many other things, our feudal system was made in Germany, having its origin amongst those fierce tribes who pushed westward from Central Europe to conquer what is now France, and crossed the sea to become the forefathers of the English nation. Theirs was not a feudal system under which the king was held to be owner of all the land; they acknowledged no king, and it may be of interest to note that Hengest and Horsa did not come to Britain with any claim to the Divine Right, but merely as leaders of what proved to be a filibustering expedition. The title of *King* was only assumed by Hengest on the death of his brother Horsa in A.D. 455, more than five years after their landing.

Under the Saxon laws, every freeman was a soldier trained to arms, who held his land on the understanding that he must turn out for the defence of his country, although not liable for foreign service. He owed his duty, however, not to the king but to the country. The only form of personal allegiance which existed was that of the *free companions*, who were men under a bond of partial vassalage to some powerful lord, and in return for certain privileges given to them by their chief, were bound

to serve him even to the death. Their service carried with it no reproach, they might be of the very best birth, and seem to bear a close resemblance to the soldier retainers of the feudal chieftains in Japan.

In England, until the time of the Norman Conquest, the Saxon customs suffered little change, but a standing army of a few thousand men was maintained, and allegiance to the king began slowly to replace the old idea of the obligation to defend the country. On Gallic soil, however, the system of personal allegiance had obtained full hold, and it was with the arrival of William the Norman that the feudal system, as generally understood, was introduced into England. The doctrine of Divine Right was accepted by the Normans without question, and under the king the country was divided into more than sixty thousand military allotments or *fees*, held under tenure of "knight's service," of which the conditions were that the tenant was bound to attend his lord in war, at his own cost, for forty days in each year. The holder of many fees was responsible to the king for as many armed men as he held fees. The king could thus count on a force of sixty thousand men for forty days, and could take them anywhere. But forty days is a short time in which to carry on a war abroad, and a system soon arose under which tenants were allowed to pay a fine instead of serving; with the money thus raised mercenaries were hired, and the number of tenants who turned out for war became fewer and fewer. But the old Saxon national force, the original of the Militia, was maintained in each county in the shape of the Sheriff's posse; in this every man capable of bearing arms was bound to serve, peers and priests alone excepted, but it was only liable to home service.

Until the accession of the Stuarts, the above was the system under which England carried on her wars. Gradually the feudal army, in which the great nobles rode at the head of their retainers, was displaced by another of which the members were more or less professional soldiers; but the fundamental principle remained the same, and when we speak of ourselves as a non-military nation we should remember that three hundred years ago almost every Englishman was trained to arms and liable to service in some form. It is only since the Parliamentary wars that soldiering has come to be a profession reserved entirely for specialists, and the modern military system of England, which is too well known to need description, may therefore be said to date from the middle of the 17th century. Statistics at that time were probably not very reliable, but it is astounding to read of the numbers of "able men," as they were termed, who were available with their weapons for the defence of the country. An estimate of their numbers will be given later. No mention has been made of Scotland or Ireland, because they did not form part of the union in those days, but their military record is well enough known to need no comment.

Turning now to Japan. Before about 700 A.D., the history

of the country is entirely dependent on tradition, but in the earliest records we find the doctrine of divine origin accepted as an established fact. The word "Kami," which is used in Japan to describe the divine ancestors of the Imperial Family, is usually translated "God," but as a matter of fact, even to this day it is used to express the sense of a *superior*, without reference to any heavenly origin.[1] We thus see that from the very earliest times there must have been a connexion in the Japanese mind between *authority* and *divinity*, and it is this tradition which has been handed down to the present day; we have recently seen it reflected in the despatches from the front, the Generals attributing their successes to the divine favour of the Emperor.

In the earliest days we find that the Japanese military system was not at all unlike that of the Saxons. Beneath the Emperor there was a system of decentralized patriarchal government, under which every man was trained to arms, and many of the women as well. But obeying Nature's law that in a self-governing community the strongest man must inevitably attract a following to himself, the people gradually broke up into clans, which grew more and more hostile to one another, with the result that from the end of the thirteenth century to the middle of the sixteenth the country was the scene of an incessant internecine warfare. Japan during that period was not a single State, but a collection of feudal principalities of which the stronger were constantly trying to absorb the weaker. All that time there was no national spirit such as we find in England during the same period, and the two invasions which occurred were met by the forces of the local chieftains. The old system of universal service disappeared, and the civil wars show the curious feature of being confined entirely to a certain class, which had arrogated to itself the privilege of bearing arms, while the balance of the population carried on the work of the country as farmers, craftsmen, or merchants. The *samurai*, as the members of the soldier class are usually termed, left the civil population quite alone, and the war raged through and through the land, leaving the farms and villages untouched. It was only the castles of the nobles which suffered. Another remarkable fact is that during the whole period the Imperial Family, although at times reduced to the direst poverty, was still recognised as of divine origin. Only one attempt was made to usurp the throne; it was instantly suppressed. The Emperor was practically nothing but a figurehead, all the authority which could be exercised—and that was very little—being in the hands of a species of Regent or Viceroy, called the *Shogun*; but still the hereditary ruler was recognised as a superior being.

It was in 1603 that Tokugawa Iyeyasu, first of his house to rule Japan, became Shogun; by 1615 he had beaten down all

[1] Count Okuma: "Fifty Years of New Japan." The ideographs, however, would seem to be different.—A.B.

opposition, and Japan, for the first time during centuries, owned a real master. For fifteen generations his descendants ruled the country, which they almost entirely closed to foreigners, making way only for the present system of government. Under the house of Tokugawa the samurai class reached its zenith.[1] Besides the right to bear arms many privileges were claimed by its members, who in their boyhood underwent a training in discipline and hardihood such as we can scarcely realise. Although the common people possessed facilities for acquiring the elements of learning, education was to a great extent confined to the samurai. The preservation of honour and loyalty to one's feudal lord were the first principles taught, but the law of primogeniture, with modifications, obtained in Japan, and it was often necessary for younger sons to leave their own feudal chief and go forth to seek their fortunes, either as artists or teachers, a state of affairs which was destined to have no small influence on the future of the country. Under the Tokugawa régime the country enjoyed peace, and the arts and crafts flourished to an unprecedented degree, but the samurai guarded their privileges most jealously, and the farmer, craftsman, and merchant classes were absolutely forbidden to encroach upon them. As the samurai were the only men carrying weapons they had little difficulty in asserting their rights.

In estimating the amount of justification which there is for the statement that Japan was a military nation in the old days, it is advisable to compare the number of soldiers which she possessed with the total of her population. The year 1721 is unfortunately the earliest at which we find an official census, but for that year the total population was about twenty-eight millions.[2] We know also that there were about four hundred thousand armed samurai, that is to say, the armed men constituted one-seventieth of the total population. As regards England we are even worse off for statistics, because we have no official figures prior to 1801, at which date the population of England and Wales was about nine millions. Unfortunately for our comparison, the ancient military organization of England had disappeared by 1801, the old force having been replaced by a standing army and militia, and we have to go back to 1600 to find the country still under the old system. The best authorities assume that the population of England and Wales in 1600 was five millions, a pretty liberal estimate considering the nine millions of 1801. Now there was a certain William Harrison, who was rector of Radwinter in Essex from 1558 to 1593, and wrote a "Description of England," wherein, after describing the way in which each village kept the equipment for its men at arms, he says: "As for able men for service, thanked be God! we are not without good

[1] It would appear that with the increase in the prosperity of the soldier class, some of its simple virtues faded.—A.B.

[2] "Transactions of the Asiatic Society of Japan." Vol. XXI.

store; for by the musters taken 1574 and 1575, our number amounted to 1,172,674." Therefore according to this reverend gentleman nearly a quarter of the population must have been classed as liable for military service. The statistics, of course, are by no means accurate, and the age limits for *able men* must have been set pretty wide apart in order to include so large a proportion of the people, but considering the vast difference in the figures for England and Japan, we may safely assert that so far as military traditions were concerned, England started the development of her present military system with an enormous advantage over Japan. What the result has been in each country we all know. Let us now try and trace the reasons for Japan's present position.

It was in 1853 that Commodore Perry roused Japan to the necessity for opening the country, and in 1867 the last of the Shoguns obtained permission to resign his power, the Emperor becoming the actual instead of the nominal ruler, an event which in the west is commonly called the "Reformation," but in Japan is known as the "*Renewal* of Enlightened Government," indicating that throughout the centuries the true position of the Emperor had never been forgotten. The era of "Meiji," as it is called, dates from 1868. The change was due chiefly to the energy, foresight, and patriotism of a small number of samurai belonging to what can best be described as the middle classes, and it is to these men that Japan has most reason to be grateful.

In 1869 the great feudal lords, or *daimyo*, complying with the obvious need for the unification of the country, of their own free will restored to the Emperor the fiefs over which they had until that moment exercised a power almost of life and death. In return both they and their samurai retainers received a pension from the Government. Things did not work smoothly at first, and from 1874 to 1877 there were several rebellions; but the nation gradually adjusted itself to the new conditions, and on the 11th February, 1889, a constitution was granted under which Parliamentary Government was introduced into Japan.

The House of Commons is elected by ballot, the franchise being granted to all males over twenty-five years of age who have paid taxes over a certain amount. A man must be thirty years of age before he can stand as a candidate for Parliament.

The constitution of the Japanese Upper House, or House of Peers, is well worth notice at the present juncture. Below the Princes of the blood there are five hereditary orders of nobility, to which fresh members can at any time be appointed by the Emperor. The Princes of the blood and the members of the first and second orders, answering to our dukes and marquises, have a seat in the House by virtue of their rank. The three lower orders, who with us would be earls, viscounts, and barons, elect a proportion of their members, each rank voting for the members of its particular degree—viscounts for

viscounts, barons for barons, and earls for earls. Besides these hereditary legislators a small proportion of the highest taxpayers of the country are elected by their fellows, and a large number of distinguished commoners are nominated directly by the Emperor. The House, in fact, bears a striking resemblance to the reformed chamber which has been proposed for Great Britain.

There is also a Privy Council, of which the members are sometimes called the "Elder Statesmen." It contains the best brain of Japan, and exercises an influence far greater than does our own.

Turning now to the military development of modern Japan, we start from the date of Commodore Perry's appearance, when the forces of Japan consisted of samurai who, owing to the closing of the country against foreigners under the Tokugawa régime, were armed as they had been two centuries before, and moreover owned allegiance to various feudal chieftains, instead of to one national ruler. The more advanced thinkers among the samurai had long realised that it would be to their advantage to adopt European methods of warfare, but old-fashioned prejudice proved too strong for them. The actual arrival of foreign ships, and finally the bombardments which took place in 1863 and 1864, convinced even the most conservative that it was necessary to make a radical change in armament and organisation. However the three new Corps which were raised were drawn from the members of the old samurai class, better armed than before, it is true, and to a certain extent drilled, but still feudal retainers, clansmen in every sense of the word, and by no means to be considered a national force. They did not prove very satisfactory, and in 1872 a new system of universal service was introduced, requiring every male, without distinction of caste, to serve his country as a soldier. There was much opposition on the part of the samurai, who considered themselves too good to mix with the common herd of soldiers; but fortunately the members of the most influential and noble families proved for the most part to be weak and incompetent, and could therefore be ignored, so that the reform was carried to a successful conclusion.

There was never the least opposition on the part of the common people to being enrolled as soldiers; they came forward at once, and there is a very simple explanation of their enthusiasm. Far from looking upon soldiering as an onerous duty, they realised that they were suddenly to be admitted to a privilege which for centuries had been strictly denied to them, that of being trained to arms. No doubt the samurai in former days had been treated with respect, but they could scarcely have inspired love, and the masses now for the first time saw removed the barrier which had kept them from meeting the classes on level terms. It needed no divine sentiment of patriotism to urge them to take up their burden, and once it was assumed they realised its necessity, and never tried to shake

it off. In the rebellion of 1877 the troops raised from the people fought the professional samurai, and proved that under more modern conditions a farmer made as good a soldier as any hereditary warrior.

It is here advisable to call attention to the fact that although every Japanese is classed as a soldier, it is only a proportion who actually undergo training with the colours, the remainder going straight to the Reserve. It is also necessary to note that the term "soldier" really includes "sailor," because in Japan every trained man is classed as a *gunjin*, which may perhaps best be translated "warrior," and means a member of the *gun* or armed force. The navy is the *kaigun*, or sea force, and the army the *rikugun* or land force.

For the present we will leave the military system of Japan, and turn to what is certainly the greatest change which has been introduced into Japan since the era of Meiji, viz., universal education.

It has already been stated that in the old days education was to a large extent confined to the samurai, and that many younger sons, forced to fend for themselves, had taken up teaching as a profession. When the rulers of the new Japan grasped the necessity for educating the people, they realised, being samurai themselves, that one of the chief objects of the Government must be to ensure that loyalty should be the first virtue inculcated in the schools, and they were fortunate in having ready to their hand a number of teachers of the best class who had in their youth undergone the hard training of a samurai, and who, whatever might be their defects when judged from the standpoint of European education, could be relied upon to teach discipline, loyalty, courage, and self-respect.

Studying the history of Japanese development is like diving in a lucky-tub: you grope about up to your elbows in bran, and when you manage to catch hold of something, it is apt to prove worthless on examination. But the one fact which stands out most prominently in the story of Japanese development is the marvellous foresight of the men who first formulated the system of national education. The old society had crumbled away before their eyes; they were faced with the task of laying the foundations of the new, and they had but little time in which to mature their plans, because what had to be done must be done quickly, in view of the aggressive attitude of the foreign Powers. They realised at once that if you wish to train a nation you must discipline the children, and although their scheme has several times been modified, it is undoubtedly to their wisdom that Japan owes her present greatness. It would take too long to trace the growth of the Japanese educational system to its present form, but a short review is essential of those points which at the present day affect the fostering of the national spirit.

Although education in Japan is supposed to be purely secular, the religion of the country bears a close relation to the every-day life of the people, and cannot be completely ignored.

Briefly stated, it is a form of ancestor worship, in which the Emperor is recognised as of divine descent, and the spirits of the departed, although no longer visible, are considered to be still present with those on earth.[1] From infancy a Japanese is taught to regard life merely as a stage in a journey, and death as a natural event which cannot be avoided and should therefore be met with stoicism. Just as our forefathers, when life was less luxurious than it is now, were prepared at any time to go out without hesitation in the early morning and fight for their life in vindication of their honour, so the modern Japanese on the battlefields of Manchuria were prepared at any time to die with equanimity. In each case the fortitude was due to the same cause, viz., that from childhood the individual had been accustomed to look upon death as a familiar companion, not to be courted, but nevertheless to be regarded without fear, and when the occasion arose to be encountered without flinching. The dread of death and after-punishment, which forms so prominent a feature in most western doctrines, finds no place in Japan. Nor is there any heaven in which the righteous can be rewarded. It is incorrect to say that a Japanese does not mind dying, or that he thinks that if he is killed in action he goes straight to heaven. A Japanese loves light and beauty and hates the dark, and if he is killed there is no heaven to which he can go. His heaven can consist only in the knowledge that he has done his duty.

Now the word "duty" brings us at once to the only part of the child's education with which we are at present concerned, viz., a subject which is usually translated "morals." In England, unfortunately, we are apt to regard morals merely as the observance of certain precautions which prevent us from appearing in that court which deals also with Probate and Admiralty cases. But in Japan it has a far wider significance, and would really be better expressed by the word "duty." So great is the importance attached to the teaching of this particular subject, that Baron Kikuchi, who has written what is certainly the best book in English on Japanese education, devotes more space to it than to any of those studies which form part of the curriculum in British schools, and for our present purpose we may entirely ignore that portion of the Japanese school course which with us would comprise the whole of a child's education. It has been said that in a Christian country religion takes the place of the Japanese "morals," but although this is partly true, we must bear in mind that the Japanese subject of "morals" deals with a variety of subjects which religion does not touch.

In Japan the school age is six, reckoned much as we reckon the age of a horse; that is to say, the child is one year old

[1] The old Shinto religion of Japan has been overlaid with Buddhism, and none but an expert could accurately define what the various beliefs in Japan now are.—A.B.

when born, and becomes two years of age on its next birthday. But there is an old Chinese saying that the education of a child should begin even before its birth, by training the expectant mother; therefore the Japanese do not wait till the child goes to school before they begin to teach it. The family or *house* system of Japan helps greatly to foster loyalty in the children, because under it the individual has to subordinate himself to the head of the house, much as was the case in England during the middle ages. "The honour of his house" was a common expression. Respect for the Emperor and for its superiors is inculcated from the time a baby is old enough to toddle, and before the school age is reached a foundation has been laid on which a structure of good citizenship can be raised. Sometimes there is a kindergarten stage to be passed through, and here, although the child does not learn much, boys and girls alike will be given a little national flag to carry, and taught a little patriotic song, and will perhaps be marched about the streets singing, and certainly will be taken in a body to see the Emperor if he comes near the town in which they live.

Before dealing with the subject of morals as taught in Japanese schools, it is advisable to draw special attention to the fact that education in Japan is kept outside the range of party politics, and is under the control of a permanent department, as is the case with the Army and Navy. The educational system is not determined by laws which have to pass through Parliament, but by Imperial Ordinances issued by the Emperor on the recommendation of the Cabinet after being submitted to the Privy Council. A general supervision is exercised over the subjects taught, and although for most subjects considerable choice is allowed to local teachers in the matter of text books, when it is a case of morals the Department of Education insists that no books shall be used except its own publications, thus maintaining its grasp on the one subject which is considered of vital importance to the nation.

The child of school age, whether boy or girl, first enters one of the elementary schools, of which the vast majority are Government establishments, their object being defined by Imperial Ordinance as: "To give children the rudiments of moral and civic education, together with such general knowledge and skill as are necessary for life, while due attention is paid to their bodily development." The elementary course extends over four years, and is the sole course which is absolutely compulsory, but the only children who do not go on to the higher elementary schools are those whose parents are unable to spare them longer. There is a tendency now to extend the compulsory period to six years.

In the higher elementary schools the length of the course varies according to what the future career of the child is likely to be, and there are slight differences in the instruction given to

boys and girls, the latter learning needlework, while the boys get more gymnastics.

In the elementary course it is laid down that the children shall be instructed by means of examples in filial piety, obedience to elders, affection and friendship, frugality, industry, modesty, fidelity and courage, and also in some of their duties towards society and the State. Here, at the very beginning of the child's education, we meet the word "duty," and although it has been said before, it cannot be too often repeated that duty is the keynote of Japanese morals. The word "rights" does not appear in the syllabus. Even when treating of the franchise, it is not spoken of as the "Right to vote," but the "Duty of voting."

Those boys whose education does not close after two years in the higher elementary school, their age being then twelve years, may go on to a middle school, and thence to a secondary school or to one of the universities. If a girl needs further education she goes to one of the special girls' schools.

Everyone admits that not the least important part of a nation's training is the education of its girls, and the object which the Japanese have set themselves to attain is, in their own words, to convert their girls into "Good wives and wise mothers." Both boys and girls are to be trained so as to "Make them value public virtues, and foster the spirit of loyalty and patriotism."

Lack of space forbids the detailed tracing of the child's civic education, but the general purpose of the system is to begin by teaching the infant its duties at home and in everyday life, and as its intelligence develops to go on to more advanced social questions, keeping all the time in the foreground the dominant ideas of deference to superiors, filial piety, loyalty to the Emperor, and duty to the nation. The teaching is aided by giving examples from history of the various virtues which are to be fostered.

At the very foundation comes the Imperial Rescript on Education of 1890, which is worth giving *in extenso*, although to European ears its translation does not carry the conviction that the original undoubtedly does to a Japanese. It runs as follows:—

"Know ye, Our subjects:

"Our Imperial Ancestors have founded Our Empire on a basis broad and everlasting, and have deeply and firmly implanted virtue; Our subjects ever united in loyalty and filial piety have from generation to generation illustrated the beauty thereof. This is the glory of the fundamental character of Our Empire, and herein also lies the source of Our education. Ye, Our subjects, be filial to your parents, affectionate to your brothers and sisters; as husbands and wives be harmonious, as friends true; bear yourselves in modesty and moderation; extend your benevolence to all; pursue learning and cultivate arts, and thereby develop intellectual faculties and perfect moral powers;

furthermore, advance public good and promote common interests; always respect the Constitution and observe the laws; should emergency arise, offer yourselves courageously to the State; and thus guard and maintain the prosperity of Our Imperial Throne coeval with heaven and earth. So shall ye not only be Our good and faithful subjects, but render illustrious the best traditions of your forefathers.

"The Way here set forth is indeed the teaching bequeathed by Our Imperial Ancestors, to be observed alike by Their Descendants and subjects, infallable for all ages and true in all places. It is Our wish to lay it to heart in all reverence, in common with you, Our subjects, that we may all attain to the same virtue."

It will be noticed that in the above Rescript there is scarcely an allusion to all that we understand by education; it is devoted almost exclusively to the development of character.

There are certain special days, the Emperor's birthday amongst them, which are observed as fête days, and with a view to fostering a spirit of loyalty the Department of Education has issued the following regulations for the ceremonies which are to be observed in elementary schools on these occasions:—

"Teachers and children shall assemble in the school, and shall there proceed as follows: first, they shall sing together the national anthem; next, they shall make the profoundest obeisance before the portraits of Their Majesties (most schools have portraits either given by the Imperial Household or approved by their local prefect); next, the headmaster shall read aloud the Imperial Rescript on Education; next, the headmaster shall take the rescript as his text and explain its meaning; next, teachers and children shall sing one of the songs fit for the occasion" (these songs must receive the approval of the Minister for Education).

Every opportunity is seized of identifying the children with the national existence; for instance, when Admiral Togo returned in triumph after the battle of Tsushima, three thousand children from the elementary schools of Tokio went through military evolutions before him in one of the parks of the capital, and the annual Army manœuvres are always watched by the school-children of the district in which they may happen to take place. And so, as they grow up, the members of the Japanese rising generation find themselves more and more enveloped in an atmosphere of patriotism, until to think nationally, if not imperially, becomes a habit so ingrained that even the prospect of immediate death will fail to break it.

Drill becomes obligatory in the middle schools, and the consequence is that when the lads come up for their military service a large proportion of them are to all intents and purposes already soldiers, having learnt the elements of drill, and being thoroughly imbued with the spirit of discipline. The development of recruits does not, as with us, start with their enlistment;

their training is really only a continuation of the education which they began when little more than infants, special emphasis being, however, laid on the military virtues. The Emperor's portrait and the regimental colours are treated with a respect almost religious, and it is impressed upon all ranks that service is not an obligation, but an honour. Any tendency to arrogance on the part of special corps is discountenanced, *esprit de corps* being replaced by *esprit d'armée*, and the result is a wonderful absence of self-seeking and jealousy, and thorough co-operation between all units.

The spirit thus developed is in no sense militarism. A wonderful feeling of comradeship exists between the army and the people. On manœuvres the civilians of the district will bring out tea for the troops to drink, and there is an instance of the inhabitants of a village asking the General to billet troops amongst them, because they had heard that owing to their poverty no troops were to be quartered upon the village. There is little or no swashbuckling amongst the Japanese forces, deference, courtesy, and discipline having been inculcated from the soldiers' earliest years; indeed, a whole volume could be written on the subject of how the Japanese child from its very infancy lives in an atmosphere of duty and discipline. It is impossible to conceive any system more calculated, if thoroughly carried out, to produce a nation united by the bond of patriotism, and at the same time free from the reproach of militarism. Its great drawback is, of course, the necessity for having as teachers only men of the highest character, and with the minute salaries now being paid in Japan it is more than doubtful whether the high standard reached in the past will be maintained. Even now there are cases of mutiny owing to the pupils considering that their teacher is not good enough for them.[1] But the results which recently astonished the world were enough to show what had been accomplished in less than forty years by a nation which started as a collection of feudal states, and set itself deliberately to school its children in an atmosphere of disciplined patriotism. It was not the prowess of Japan's old-time warriors which made her great, nor were the victories over Russia more than the wielding of a weapon forged nearly forty years ago by men whose names are now almost forgotten, men who had the brain to realize that with all the old restraints removed the nation must either have a new discipline or go to pieces. It is universal discipline which has brought Japan to her present pitch of efficiency. Before the outbreak of hostilities there was a very influential party opposed to the war, but from the moment at which fighting began every man sank his personal opinions and threw himself whole-heartedly into the task of beating the enemy. All the courage in the world could never have carried the armed

[1] Since the delivery of the lecture, reports have appeared in the Press showing that Japan is by no means satisfied with the class of youth now being turned out.—A.B.

forces of Japan to success had it not been for the discipline of the nation behind them, a discipline which brought the reservists back to the colours when a retrospective Act was passed recalling men who had long been out of their time; and kept the Press and people silent lest the enemy should hear, although every soul in the country knew that a battleship had been lost. Seek for the origin of this discipline, and you will find it in the little elementary schools; it was there that the seeds of victory were sown.

Admiral of the Fleet Sir G. H. U. Noel, K.C.B., K.C.M.G.:—We have heard a most excellent lecture this afternoon, and I think that if we take it to heart we shall have learned a very great lesson from the Japanese. I had the privilege of serving in a ship in Chinese waters, and we spent a great deal of our time in Japan in the years 1865-68—a period which I think preceded the time referred to in the paper when "the renewal of enlightened government" occurred. The renewal of enlightened government was not done without a considerable amount of fighting. Some of the great Princes (the Daimyos, I believe I am correct in saying) seized the person of the Mikado, who was the spiritual Emperor, in opposition to the *Shogun,* who was the temporal Emperor, the result being that the *Shogunate* came to an end, and the Mikado was proclaimed Emperor of Japan. That was the beginning of the "renewal of enlightened government"—a very nice term, a very gentle term, but it really means a revolution. It had its peculiarity as a revolution: it began from the top, from the Emperor downwards. Most revolutions consist in the upsetting of all authority, and begin from the bottom. The Japanese were wiser; they began from the top. They sent delegates to all parts of the world to learn what was best in the world. Those delegates came home and made full reports, whether it was on military, naval, financial, commercial or educational matters, and the best of everything was, as far as possible, adopted. That is what we may consider a revolution beginning from the upper ranks. It was again my privilege to be Commander-in-Chief in China during the Russo-Japanese War, and the Japanese did me the honour of inviting my squadron to visit their ports immediately after the war. They then welcomed and entertained us in the most cordial and enthusiastic manner, chiefly on account of the renewal of the Alliance between Japan and Great Britain, which was made about that time. I endorse all the lecturer has said about the marvellous qualities of the Japanese. Their loyalty and patriotism and charm of manner are not equalled in the world. It is commonly said that a child does not cry in Japan; that is due to good mothers and wise bringing up. The lecturer has brought to our notice the question of education in Japan, which I hope will be taken seriously into the consideration of members of the Government in this country. I also think the composition of the House of Peers in Japan is interesting. I am sorry that there are no Japanese gentlemen present; that, I fully believe, is due to their natural modesty. They do not like being lauded. There is no reason why we should not speak highly of them when we think so, but they do not like to hear it themselves. I think we have to heartily thank the lecturer for bringing this subject so well to our notice.

Lieutenant Carlyon Bellairs, R.N.:—I think I shall be expressing the opinion of everyone here present when I say we have listened to a

most valuable and timely paper—most timely from my point of view because most of the lectures that we have at this Institution deal with the material side, whereas Sir Alexander Bannerman's lecture has dealt almost entirely with the moral side. We all know what Napoleon said about that—that the moral factor is to the physical something like three to one. The lecturer has impressed upon us the fact that character is a great deal more important than knowledge, and that character, as I understood the lecture, is the foundation of Japanese training. You may say of a man who knows everything but who does not possess character: "Full many things he knew, and ill he knew them all." The lecturer has told us how the Japanese character is formed in infancy and in the schools, and he therefore has impressed upon us the important factor of the influence of women. I think he might have carried the influence of women even a little further. I cannot speak from first-hand knowledge, like the lecturer or Admiral Noel, but I have heard from others that it is untrue to say the Japanese are afraid of nothing. I have heard that all the time they are at war they are very much afraid because they will have to face their womenkind if they do not succeed. Therefore, they have applied to a whole nation what we only applied to a class in the old days of chivalry. It seems to me, if they have time to listen to me, that many of the women who are agitating for what they call their "rights" would do better in levelling up the men instead of trying to put themselves on the same level as the men. Sir Alexander Bannerman has dealt with the question of the elementary schools, and I hold in my hand a criticism which was made in 1905 by a distinguished Japanese gentleman, Count Hirosawa, on our own elementary schools. He said: "First and foremost I am struck with the absence from your educational system, at all events from the lower middle working classes, of any provision for teaching them their duties towards the State. English education instils discontent. They learn how to exact their rights, but there is apparently not a word or a line in any of the text books, or in the spirit of the education code, which teaches sacrifice for the country as a condition of national life. In Japan and Germany it is otherwise." I contend that it is infinitely more important for this country, England, to teach the very things which are at present absent from our educational system, because we lack the vital experience of the suffering which other nations have endured through invasion, and which has caused them to hand down an almost sacred tradition of the importance of national defence from father to son in family life. In order to show how we miss that I will give a quotation from Lord Morley, who a few years ago wrote: "What is the secret of the operation which places a ballot paper in one hand of every citizen and at the same instant a rifle in the other? . . . . No other effect of democracy is comparable with this, no other so surprising, no other so widely at variance with confident and reasoned anticipations." I say that the reason Lord Morley missed it is that Lord Morley had been brought up in the atmosphere of the philosopher's study and has lacked what he would find in every family in Germany and Japan—that tradition in the family life which hands down a vague estimate of all that has happened to the country, of all that it suffered and endured when it was invaded by hostile armies. That is the reason that every democratic citizen in Germany and Japan is willing to arm all the citizens with a rifle as well as with a ballot paper. I have had recalled to my memory by this paper that in connection with our elementary schools a gentleman offered in 1905 to pay the expense of erecting a flagstaff and flying a flag at one of our elementary schools in

London The offer was accepted by the managers, but it was refused by the London County Council. I think that in many countries if people existed who refused to fly the flag, even when the expense was paid, they would probably be flogged round the town by the populace. In order to show the attitude which has somehow or other been taken up in this country—how it has come about I do not know—I want to mention this incident: I went to one of our Cabinet Ministers some time last year and asked him whether he would use his influence to have the flag flown over the National Portrait Gallery on Trafalgar Day, when we decorate the Nelson Column. The answer astonished me very much. It was: "I hate all your damned Imperial flag-wagging." That shows the attitude of mind which has become possible in this country, and which ought to be utterly impossible. I remember a Member of Parliament coming up to me and saying that he would take thirteen millions off the Naval Estimates to-morrow. I said: "Well, Sir, the only result would be that the Germans would be over here shortly." He turned round to me and said: "What do I care? Do you think that my unhappy constituents would be worse off under Germany than they are under this country?" I remember that conversation perfectly, and it shows that an extraordinary position is arising in this country. Anybody who listens at many open-air meetings can see what is happening, and knows that it is thought a fine thing to talk in that utterly disloyal and unpatriotic way. I will not pursue that part of the subject any further. I think the right spirit to adopt was that shown by a Japanese officer when he was over here visiting this country. He was at the house of one of the descendants of Nelson's captains, and the descendant showed him a chair in which Nelson had been in the habit of sitting. He looked at it with reverence and awe for a moment or two, and then sank down on his knees and kissed the chair. That, I think, is the right spirit; and all of us in our own persons can teach children and men to adopt the attitude which Browning adopted when he passed over the waters where Nelson died: "Here and there did England help me; how can I help England, say?" It may be retorted on me that Browning also gave the definition of patriotism, that it was the easiest virtue for a selfish man to acquire; but could not I retort that even religion can be used as a mere profession? It does not derogate from patriotism that it can be put to base uses. The same retort could be made on Dr. Johnson, who defined patriotism as "The last refuge of a scoundrel." We all know about death-bed repentances, and that on his death bed the scoundrel turns to Heaven, and turns to what is best of all the virtues, and that is patriotism. Walpole, again, said: "'It is but refusing to gratify an unreasonable and insolent demand, and up starts a patriot. . . . I disdain and despise all their efforts." But what was the attitude of Walpole? Why, he had refused during peace what he called the unreasonable demands of the Army and Navy; and what was his attitude during the war? He disclaimed all responsibility, and tried to thrust the responsibility entirely on to the shoulders of the men who, with antiquated instruments of war, were trying to wage war successfully; he threw the whole responsibility on the admirals and generals. In conclusion, I would like to refer to one matter in regard to the question of the teaching of patriotism. We have in this country an abundance of Leagues. I should think if anyone sat down and tried to enumerate all the numerous little Leagues which have offices in London he would obtain a list of something like thirty or forty, all of them having as their main object the teaching of patriotism. There are the different

Navy Leagues, the British Empire League, the League for Flying the Flag on the Schools, the St. George's Society, the innumerable other Societies, many of which some of you have probably never heard of. Does it not seem in these days, when the newspapers this morning announce that the German Navy League has reached a total of over 1,030,000—does it not seem to be advisable, in the interests of greater efficiency, that we should unite all those Leagues into one great patriotic body, and allow that one great patriotic body to carry on all their separate functions? In that way we should get much greater efficiency, and the different branches of this patriotic work would be farmed out to sub-committees. We might then stand a chance of getting very big men at the top of the League instead of men who are not quite so big, as is the case with all these small Leagues. If that were done I think we might be able to force on a Government the teaching of patriotism in the schools, if we had a big League agitating for that purpose. I think the character of a people is best exemplified by its patriotism, and by patriotism I mean willingness to make sacrifices on behalf of the country. In no way can people show better how they esteem patriotism, how they value it, than by the honour which they are prepared to pay the fighting services. The Government ought to make the fighting services their first consideration, and it should be held by everybody, as Sir Alexander Bannerman has pointed out, to be an honour to entertain and billet a soldier, and to receive him anywhere.

Colonel J. H. ROSSETER, late R.A. :—I had the privilege of reading this lecture, a proof of which was sent to me in the country beforehand, and I came up to hear it delivered because it seemed to me so excellent and to come, as the last speaker has said, at a most timely moment. For the last few years now I have been working as honorary secretary of a Schools Union, and the influence of the patriotic teaching of Lord Meath during those years has been something extraordinary. I felt that this lecture might be looked back upon in the future as historical, because the modern Bushido or Boy Scout movement is now rapidly taking a great hold in and permeating itself over the whole country. A few months ago General Baden-Powell appealed for retired officers who would volunteer to help in the work. I am afraid I was rather superior to it at first; I did not think that it could be useful, but eventually I did join, and I have never regretted it. I therefore felt that I must come here to-day to say this, because there is still a great need for more retired officers to help in this movement. When it is first started in a particular district it goes like wildfire. It is taken up with the red-hot enthusiasm of youth, and it makes the older people feel quite young again. Within a few days of my retirement from the Service I was at a lecture on the necessity for military training in this very Hall, and then just as the ties with the old life were being severed I was feeling that there was really very little more worth living for; but when a short time ago Sir Robert Baden-Powell spoke to our Boy Scouts—about 150 of them—and in his quiet way told them that in the last six months he had heard of 300 cases of lives being saved by the Boy Scouts, I could not help thinking what useful work was now being done. I put that in my mind, and thought that if ever I got a chance of speaking at the Royal United Service Institution I would tell the audience that fact, because I felt it was one that was well worth repeating. It is said that in a short time Sir Robert Baden-Powell is going to leave the Regular service to devote more time to this Boy Scout work. The whole of the United Kingdom will then promptly be divided up into districts, and there will be a great need of resident retired officers who

live in the various districts to come forward and help. I would suggest to the Council of this Institution that it is not right that the capital lecture that we have heard, especially the last parts about "duty" and children, should be hidden up in the JOURNAL of the Institution, but that it should be printed as a pamphlet, so that it can be put into the hands of those retired officers who will be trying to teach this Bushido spirit in the future. I would once more repeat that this Boy Scout movement is a most wonderful one. Personally, I feel that it has put altogether new life into me. A young fellow, a Scoutmaster of not more than 20, said to me only the other day, that he had succeeded in increasing the measurements of two or three boys by an inch or two; and he said to me: "Colonel, you see we are really going to have a new generation of boys, quite different from the present generation." I made a quiet salute in a very humble way and said: "Yes." And I honestly believe we shall, if the Boy Scout movement is allowed to have full sway.

Captain C. A. L. YATE, Yorkshire Light Infantry:—I was present in Japan about the same time as the Lecturer; we heard the same things, saw the same things, and generally came to the same conclusions. I hope you will therefore bear with me for a few minutes while I make some remarks corroborating and elaborating some of the points on which he touched. The lecturer referred to Bushido, about which there has been an enormous amount of nonsense written. Who was the writer of the English book entitled "Bushido"? He was a Japanese Professor educated in America, and—I speak subject to correction—I think he was a Christian. In any case, he must certainly have been out of touch with the military and naval circles which formed the repository of knightly traditions, such as they were. I have read "Bushido" from cover to cover. There is much that is beautiful in it, but there are certain things in it that would not appeal to people brought up in the English style. In any case, I feel convinced that the ancient feudal classes knew and cared little about a great deal that is written in it. The samurai had one great virtue—devotion to their masters; but they also had big vices. They were not always warriors; history tells us that in Japan, too, there were long periods of peace, and during those periods the samurai degenerated and became lazy, bullying parasites. When I was in Tokio, a member of the Embassy, who has been for many years in Japan, informed me that when he first came out to the country the samurai often terrorised the peaceable citizens, chasing them all over the place with their swords and even cutting them down at times; if anybody remonstrated with them they would reply that they were prepared to die in the same way. To illustrate this point there is a story related in Imbrie's Grammar, one of the text books for British students in Japan, of a barber who made a remark offensive to a samurai. The samurai drew his sword and chased him; but at the psychological moment the fugitive made a remark which tickled or interested the samurai so much that his intended victim escaped. The Lecturer has proved to us that in the fighting against the new army raised by universal service, the samurai came off second best. He also mentioned that the Japanese had no more desire to die than any of us. I discussed this with some Japanese officers after the war, and they assured me that it was so. One of my informants—I think he was a non-commissioned officer—told me that the night before the battle the murmur of Buddhist prayers was heard all through the camps. I am not trying to decry the Japanese; I simply wish to bring out in bolder relief the magnificent spirit of patriotism, loyalty and self-sacrifice which enabled them to achieve such stupendous

victories in spite of human feelings and failings. They are not obtuse savages, but highly civilised beings, as we hope we are. With regard to the fear of death, the Japanese have some inducement offered to them, for much is done in Japan to honour those who die in battle. Their pictures are hung up in the schools, and in the mess rooms of the regiments; their names are taught to the children and they are spoken of reverently, while the Grand Temple erected in their honour at Tokio is the scene of solemn and beautiful ceremonies at stated periods. What have we British soldiers to look forward to? We are thought stupid and looked upon as blunderers if we expose ourselves. I would call to mind that a man has recently given a bequest to reward heroic deeds, but excluded soldiers and sailors, whom he termed "false heroes." One cannot but be sorry that those high authorities who accepted his gift could not see their way to administer some rebuke to him for his infamous words. I believe myself that the grand things the Japanese have accomplished are due to the introduction of universal service more than to anything else, and many Japanese say so too. The obvious reply to that is: "Why has universal service not achieved similar things in other countries?" I would answer that, like the good seed spoken of in the Bible, it must fall on good ground, which it did in Japan. If it is introduced into a country with an ignorant peasantry and corrupt rulers, or in one which has a bullying, rough official class, or in a country where democracy runs mad, there it cannot accomplish its beneficent results to the full; but I am quite certain that as it has been in Japan and other countries, so with us—it will furnish the cure for most of the evils from which our national life suffers. Compulsory service has done wonderful things for other nations which possess less noble traditions than we; I am quite convinced that if it is introduced into our country, we too in our next war will accomplish results such as those with which the Japanese dazzled the world.

Major P. W. NORTH, 3rd Royal Berks Regiment:—I feel a great deal of diffidence in speaking after two officers, both of whom have served on active service with the Japanese Army, and who are therefore very much better qualified than I am to give an opinion; but I have at least one qualification, which is that I have attended a Japanese school. The lecturer has spoken about the effects of Japanese education, and as it is a question I have studied I would like to bring out one small point. Sir Alexander has very rightly told us about the excellent moral teaching given in Japanese schools, and we have seen the effect it has had in the great things the soldiers of the country have done. If I am to believe what was told me by my Japanese friends—some of them very old men—the magnificent fighting men of the present day did not exist in the old times. The old samurai was not a good fighting man. I will give you one instance which was told me by an old man, himself an old samurai. He said that in the old days—that is to say, in the time of the *Shogun*—if one man drew his sword and there was a quarrel, twenty men would run away. I said: "Not samurai?" "Yes," he said, "samurai included." I discovered, not from one but from many instances told me by the Japanese themselves, the extraordinary difference there is in the spirit of Japan now compared with older times, and the extraordinary effect which the education they have obtained in morals has had upon the military character of the Japanese.

Captain C. SLACK (late Middlesex Artillery):—I was in Japan two years ago, and one of the most prominent features I noticed in the Japanese

character was their reverence for authority. The lecturer mentioned the word "swash-buckler," but I think it would be almost impossible to apply that word either to the military or to the people of Japan. At the same time, the Japanese have a decided manner about them which cannot be mistaken. If you go amongst them you will soon find it out. They are very quiet and observant also. With regard to education, I was really astonished to see in some cases how great an advance had been made. To give one instance: I arrived by steamer at Tsuruga, coming from Russia, and I wanted to send a telegram to my friend at Yokohama. I went to the telegraph clerk and said: "Can I send a telegram?" He said: "Yes, Sir." I said: "Can I write it in English?" "Oh! yes," he said. I wrote it out and handed it to him. He read it and said: "That is quite right, but you can save twopence by taking out one word." I wondered to myself whether a foreigner who went to a telegraph clerk in England would receive similar attention in regard to details. In travelling in Japan you will find a quietude that you do not notice in any other country—in fact, Japan has been described as the land of flowers and babies. Babies are everywhere; you cannot travel about without seeing plenty of them. A most noticeable thing which a Japanese friend said to me was: "Although we have lost so many thousand men in the war, it is a most astonishing thing that in this year (1908) there has been a larger number of boys born in proportion to the population than has ever been known before." He seemed to think that that was a kind of recuperative agency which made up for the losses sustained in the battles. With regard to the question of education, I came across all classes of people in the course of my travels. When I was at Port Arthur my Japanese friend there devoted a whole day to showing me over the ground where the battles had been fought, and he could speak English as well as any of us here can speak it. Another day he could not come himself, so he sent his clerk, who was an equally good English scholar. It appears to me that everybody there seemed to know English. Even the railway stations had their names posted up in English characters. The only class that did not speak English were the riksha men, who of course could not be expected to know it any more than we should expect a tramway clerk in London to understand if he was spoken to in Norwegian or any other foreign language. I found the people of Japan most delightful; they were always courteous, and everybody seemed to be contented. There were no beggars.

Sir ALEXANDER BANNERMAN, in reply, said:—I noticed in the course of some of the able speeches which have been made that my lecture has given the impression that I have an unqualified admiration for the Japanese. Anybody who has ever seen the Japanese fight is bound to admire them, and Captain Yate and myself were two of the men who were privileged to watch them storm Port Arthur on several occasions. Anyone who saw those little men die in their thousands was bound to feel a transcendent admiration of their courage. At the same time, there is a question very often asked but which one cannot possibly answer, and you can see for yourselves that it is not answerable. People ask: "Do you think British troops would do what the Japanese have done?" The only possible reply is: "If I thought not I should not say so." I call your attention, however, to Napier, who, in his history of the Peninsular War, says, in speaking of one of the sieges—I have never been able to turn up the quotation again: "When the actors in this drama are dead, nobody will ever believe what British soldiers have done." As Captain Yate said, it is

quite a mistake to suppose that the Japanese do not mind dying, and I can quite believe that before a battle the camps are simply humming with prayers. Then it is said that a Japanese soldier never turns his back to the enemy. He does; so do all troops—the British, the Germans, and everybody. All materials have their breaking-point, and human courage obeys the same law—strain it beyond endurance and it breaks. One must confess that the Japanese breaking-strain is wonderfully high; but still it is there. I do not wish by any means to make out that the Japanese are perfect—far from it—they have many glaring defects, and you cannot live among them without seeing their faults. For instance, their magnificent system of education is a counsel of perfection, and is not carried out quite so admirably as one might expect from the text books; but nevertheless, one cannot help admiring the splendid results which have been produced from material which I should consider inferior to our own.

The CHAIRMAN (Lieut.-General Sir H. C. O. Plumer, K.C.B.):—It is now my duty to sum up the proceedings, and I can assure you I shall not detain you very long after the very interesting and most eloquent speeches which have been made upon the lecture. I am sure I shall be voicing the opinion of everyone here in proposing a hearty vote of thanks to the lecturer, and in assuring him, and also the gentlemen who have joined in the discussion, that no one who has attended here this afternoon will regret for one moment that they came. There are one or two points which occur to me on which I should like to make a few remarks. I think the answer which would be given by most people if they were asked what is the most remarkable feature in Japan and the Japanese of to-day would be, the extraordinary rapidity with which they have come into prominence among the great nations. That, I gather, is the view held by the lecturer and by most of the speakers. Personally, though I cannot speak with any great confidence on the subject because I have never been in the country, I do not think that that is the opinion of the Japanese themselves. I read recently a book, which many of you have no doubt also read, called "Fifty Years in Modern Japan," by Count Okuma, who was late Prime Minister of that country, which deals with religion, science and art, the Army and Navy, commerce, finances, and every department and service of the State. Most of the book was written by the author himself, and the chapters he did not write were written by men who evidently are leading authorities on their subjects, and they one and all trace the development of the particular subject with which they deal, not from the last forty or fifty years, but from sometimes a thousand or fifteen hundred years ago. I think that shows that in the view of the leading men of the country, their development has not been so strikingly rapid as it seems at first sight, but that it has been really a rather gradual process. Another point which I think must strike everyone who reads about Japan is the extraordinary difference in the attitude of the nation before and since communication was opened with the Western world, *i.e.*, when Commodore Perry went to Japan from the United States in 1853. Prior to that time the Japanese had determinedly and deliberately secluded themselves from communication with other nations, and at the same time they firmly believed they were immeasurably superior in every respect to them. They had a rude awakening when communication with the West was forced upon them, and I think the attitude in which they accepted that awakening was most remarkable and most characteristic of the nation. They did not, as one might possibly have expected, argue that any inferiority of their own nation to the Western nations was more apparent than real, nor did they adopt a

complacent attitude and say that, whatever the opinion of the West was, their own standard was quite good enough for them. On the contrary, they appear one and all to have set to work with grim determination not to be satisfied until they had not only reached the standard of the West—which, as Sir Gerald Noel has explained to you, they took very good pains to accurately ascertain—but till they had excelled it. That is a most remarkable illustration of the national spirit, I think. We all agree that this national spirit has been the inspiration of their success as a nation, and I think we all agree that the source of that inspiration is the education of the children. The prominence which is given in the Japanese education to the great characteristics of loyalty, self-sacrifice, discipline, courage, and self-respect are most remarkable, and it is on that point on which comparison has been drawn by the lecturer and the speakers—notably Mr. Bellairs—between them and ourselves. I was going to say a few words to you on what the lecturer has said about the Japanese indifference to death, but that subject has been so ably treated by Major North and Captain Yate that there is very little more to be said on it. Some of us have had to deal with savage tribes who had an absolute fearlessness and contempt for death, and that we ascribe to what we call fanaticism. We have always comforted ourselves by saying that when such tribes became civilised all that fanaticism would disappear, and that no doubt has certainly been the case; but the indifference to death of the Japanese is rightly not ascribed to fanaticism but to familiarity with it during life. Whether that indifference will fade or not as generations go by, we do not know; but I am quite sure that any nation which has a national spirit such as is described by the lecturer will never fall far behind in any enterprise, peaceful or warlike, that it may be engaged upon. The lecturer has compared our military system with that of the Japanese, and he has shown us conclusively that, as far as tradition and history are concerned, the advantage is all on our side. But I think a good many who have listened to him must have wondered whether any of us, given the ability—and no doubt many here, including the lecturer, have the ability—could have sat down and written in similar or corresponding terms on our own national spirit of to-day. It is questionable whether amongst us to-day there is real patriotism and real loyalty; whether when we find ourselves being surpassed by other nations in any enterprise, peaceful or warlike, we take up the attitude that the Japanese took up when they found they were behind; whether we display the same grim determination not to be satisfied until we have regained our lost ground. I am not sure that it is so. Then again, can we answer the question truthfully and satisfactorily if we are asked whether we consider the responsibilities of citizenship as much as its privileges, and whether we attach as much importance to what we owe to our country and the State as to what we can get out of it. Those are very awkward questions for any of us to answer if we had to sit down and write a paper on the national spirit of our own country of to-day. And if we cannot answer those questions to our own satisfaction, the reason for it is just as obvious as the reason for the contrary is in Japan. It is in the education of our children. The lecturer and many of the speakers have very eloquently described what is absent from the training of our children, namely, that we take little or no pains to teach them to be loyal, to be patriotic, and to feel—each boy and each girl—that when they come into the world as British citizens they owe something during the whole of their lives to their country. That, I am afraid, does not form any part at all—or if it does form a part at all it is a very subordinate part—of our system of national education. I was going to say

a few words to you in that respect, in the absence of Sir Robert Baden-Powell, who was to have taken the Chair here to-day, about the Boy Scout movement. Another speaker, Colonel Rosseter, has spoken to you on the subject. I am associated with Sir Robert Baden-Powell in the management of the Boy Scouts, but that does not preclude me, I think, from saying that the country already owes him a great deal for what he has done in starting the Boy Scout movement. It is his aim, and it is the aim of all of us who are associated with him, to try and supply that want to which I have referred in the teaching of the boys. Our object is to try and teach each boy to feel that he comes into the world as a citizen of the British Empire to be of some use to that Empire, and that he will be judged by his countrymen and countrywomen, not by his own success, but by what he has done for his country, and that however willing he may be to serve his country, he cannot be of real practical use unless he has set himself to do it and to learn how to do it from his earliest childhood. So far from it being a military organisation, what we aim at in connection with the Boy Scout movement is to train up good citizens. I think it is a bad sign of the times that it should be left to one individual to inaugurate such training instead of it taking, as it should do, the first place in our national system of education. I think the lecturer has shown us, if we did not know it before, that Japan has pointed out to us what can be done if our citizens are imbued with the national spirit which can yet be imparted to our own people. I now ask you to express your thanks to the lecturer, Sir Alexander Bannerman, for the excellent lecture he has delivered, which I am sure we have all enjoyed.

THE EMPLOYMENT OF MECHANICAL TRANSPORT FOR MILITARY PURPOSES.

By Captain H. R. HAYTER, A.S.C.

NEARLY all the great powers, including ourselves, appreciate the numerous advantages of Mechanical Road Transport for Military Purposes.

Its mobility, the reduction in road space and personnel, the small compass in which it can be packed, its freedom from panic, and its sanitary advantages have all been recognised. But a great deal has yet to be learnt about the use to which it can best be put, and about the task of keeping it in efficient working order under the trying conditions of Military Service.

There is a very prevalent idea amongst the uninitiated that, if Mechanical Transport is suddenly wanted, it will be only necessary to substitute motor 'buses, or some of the other types of vehicles we see dashing about, for the horse-drawn wagon. Much more than this is required. The highest organization is necessary if the advantages of Mechanical Transport are to be fully developed.

It must be remembered that Mechanical Transport is entirely artificial; everything must be done for it, and it is peculiarly sensitive to any neglect.

A system by which every vehicle is carefully examined on the termination of its day's work is necessary if breakdowns are to be avoided. In the field fully equipped Mobile Workshops must be at hand to carry out all running repairs. Immediately a part becomes defective or needs adjustment it must be attended to, and a reserve of vehicles must always be kept in hand to take the place of those under repair.

The working of railways and motor 'bus companies is simplicity itself compared with Mechanical Transport employed under active service conditions.

The former have a regular routine which they can easily enforce and which is seldom interrupted. They run their vehicles over the same route daily, the roads used are good, and the vehicles return to the same depôt at night, where, in the case of 'buses, they are examined by men who become specialists as regards details; for instance, one man does nothing but examine the springs and brakes, another man tests the electric ignition, a third the gear boxes, and so on.

In spite of all this you are all familiar with the sight of a broken down motor 'bus, and I am informed that from 15 to

20 per cent. of the fleet of a 'bus company are always under repair.

If this is the case with a commercial concern, what will be the state of affairs if vehicles of a similar type are employed on a campaign?

Consider also the enormous number of different parts composing a motor vehicle which are likely to require renewal —washers, ball races, bearings, gear wheels, and a hundred and one other things. If repairs are to be carried out expeditiously, these parts must be kept in stock. There will not be time to manufacture them in the field even if it were possible.

It will be seen that a very complete organization for the supply of new parts to replace those which have become worn out or defective is essential, and unless the vehicles are perfectly new, the demand for repairs will be immediate. Facilities for executing such repairs should be the first step taken in the formation of any Mechanical Transport Unit. This important detail is, however, usually the last to be considered.

In considering the type of Mechanical Transport for our Army, the character of the country where military operations are likely to occur, and the most suitable types of vehicles obtainable from civilian sources, should be carefully studied.

The organization should provide:—

a. Small, highly-trained units, capable of rapid expansion on mobilisation. One of these small units is, I consider, essential during peace for every Mechanical Transport Unit required on mobilisation. Their strength should not be less than one-third of their war establishment, and in peace time they could be employed at remunerative transport work.

b. Adequate provision must be made for the repair of defective vehicles and the supply of spare parts.

c. The vehicles and personnel required to complete the Mechanical Transport units to War Establishment must be rapidly procurable from civilian sources. *Uniformity of design for these vehicles is of the first importance.*

d. The system employed in the field should be elastic and capable of meeting the various circumstances of a campaign.

All motor vehicles may in the first instance be divided into three great classes:—

Firstly, those whose prime mover is the steam engine. Secondly, those whose prime mover is the internal combustion engine, the fuel of which is either motor spirit, paraffin, benzol, etc. And thirdly, the electrically propelled vehicle, about which I will only say that it will never be of any use for military

purposes until a light and efficient storage battery is invented and there are facilities everywhere for charging it.

Before describing the various types of Mechanical Transport vehicles in general use, let us consider the advantages and disadvantages of the steam and internal combustion engined vehicle.

First of all there is the question of *Reliability*. A few years ago the steam propelled vehicle was infinitely more reliable than the one fitted with the internal combustion engine, but the difference between the latest types of both classes at the present time is very slight indeed, and depends almost entirely on the personal element. The internal combustion engined vehicle (this type of vehicle I will term the I.C. vehicle) if in the hands of a neglectful or ignorant driver will prove an endless source of trouble, but the steam vehicle in the same circumstances would probably hammer along for a considerable time before its constant neglect developed into a serious defect. Provided both types of vehicle have all necessary repairs carried out promptly and the personal element is ignored, they may be accepted as equally reliable.

The steam vehicle is on the whole much easier to repair than the I.C. vehicle.

Radius of Action.—From a military standpoint this is a most important consideration, and in this respect the I.C. vehicle scores heavily. All the existing military and commercial types of steam vehicle (excluding motor cars) have to stop every ten to twenty-five miles, according to the size of their tanks, for the purpose of taking in water. In this country water can nearly always be found along the roadside, and with a little forethought a good driver will rarely find himself short of it. On the other hand an I.C. vehicle with an efficient radiator can go for days without requiring any water.

A steam vehicle, unlike a horse, must have water when it wants it, and there can be no pushing on for another three or four miles if the water tanks are empty. By sending an officer in advance to reconnoitre for watering places, with a few men with spades and shovels, watering can be often greatly expedited.

The bunkers of most steam vehicles only hold from 3 to 5 cwt. of coal, usually enough for 20 to 30 miles when laden; for marches over that distance special arrangements are necessary, but the fuel carried in the tank of an I.C. vehicle is usually sufficient to take it about 100 miles, and in the case of motor cars considerably further.

The importance of fuel consumption must also be considered from the point of view of supply.

To travel one mile a steam vehicle of 5 tons capacity requires about 19 lbs. of coal.

An I.C. vehicle of the same carrying or hauling capacity will travel one mile on between 2 to 3 lbs. of fuel; or in other

words, there is a difference of about 16 to 17 lbs. a mile in favour of the I.C. vehicle.

The saving in the transportation of fuel, both in bulk and weight, when I.C. vehicles are used is therefore enormous.

Speed.—The speed of a convoy of steam vehicles, if required to march in close formation on account of tactical considerations, is limited by three factors: firstly, the speed of its slowest vehicle; secondly, the capacity of the smallest water tank; thirdly, the number of vehicles in the column.

The first needs no explanation. As regards the size of water tanks and number of vehicles in the column. In this country it is rarely possible for more than 3 or 4 vehicles to fill their water tanks from the same source simultaneously. It usually takes about 10 minutes for each vehicle to fill its water tank. Supposing the convoy consisted of 20 vehicles which require water every 15 miles. Then if 4 vehicles could be watered at once, it would take 50 minutes before all the vehicles were watered and the convoy able to advance as a whole. If the water tanks were larger the delay would be less frequent, but slightly more time would be required to fill the water tanks.

Working independently, the average speed, with good road conditions, of a steam vehicle capable of hauling or carrying about 5 tons useful load is 5 miles an hour. This includes stops for water; but the speed of 5 miles an hour is greatly reduced when working in a convoy. In fact, the speed decreases as the number of vehicles increases. But the ratio in which the speed decreases is far greater with steam than with I.C. vehicles, which do not require to stop for water.

The I.C. vehicles capable of carrying 2 tons can average about 12 miles an hour, while those carrying 5 tons can average about 7 miles an hour, provided the roads are good and not too hilly.

When cold, a steam vehicle requires from an hour to an hour and a half to raise steam to working pressure, but an I.C. engine can be started in a few minutes.

Price and Cost of Maintenance.—At first this hardly seems a military consideration, but in reality I expect it will prove the governing factor of our policy.

The cost of a steam vehicle of 5 tons carrying or hauling capacity is nearly £200 less than an I.C. vehicle of the same size. The great majority of carriers in this country are small men owning one, two or three motor vehicles and perhaps a few horses. To them capital outlay is of primary importance, and it is on this account that, excluding motor 'buses, about 80 per cent. of the motor vehicles in the British Isles with a carrying capacity of three tons and over are steam vehicles.

Steam vehicles are not as suitable for military purposes as the I.C. vehicle, and I think that if it is desired to encourage the production of a uniform type of vehicle which is as suitable for commercial purposes as any existing type of vehicle, but

which would be much better than any existing type of vehicle for military purposes, the only way to do so is for the War Department to pay a subsidy to defray the extra capital outlay on the part of the purchaser.

The cost of maintenance of a steam vehicle is also less than an I.C. one, and if the latter is fitted with rubber tyres, these alone will cost about 1¼d. to 2d. a mile.

I will now describe the various types of self-propelled vehicles in general use, and consider their advantages and disadvantages. I classify them in five categories:—

1. *Traction engines.* The heaviest type usually weighs from 10 to 15 tons.
2. *Light tractors* or motor tractors, as they are sometimes called. These are miniature traction engines, but weigh under 6 tons.
3. *Motor lorries or wagons.* I place in this category all those vehicles with a carrying capacity of from 1 to 5 tons, including motor 'buses.
4. *Motor vans.* Vehicles whose carrying capacity does not exceed one ton.
5. *Motor cars, motor ambulances and motor bicycles.*

The distinction between a light tractor and a lorry is, that while a tractor hauls its load behind it in a separate vehicle, a lorry carries the greater part of its load on a platform immediately behind the driver's seat.

Traction engines.—I think I am correct in saying that traction engines were the first type of mechanically-propelled road vehicle to be used to any extent. The type originated in this country, and English traction engines are to be found all over the world doing rough-and-ready work. Few people realise the number of purposes to which the modern traction engine can be put beyond its chief work of *hauling* loads. Practically all traction engines are propelled by a steam engine. The great feature of a traction engine from a mechanical transport point of view is that it can be easily detached from its train of trucks and wagons, and it has a winding drum on the back axle containing about 100 yards of wire rope, by which it can haul itself and its load almost anywhere.

When mechanical transport was first introduced into the Army Service Corps in 1902 the heavy traction engine was practically the only type of self-propelled vehicle in commercial use. Owing to their weight and size these engines do considerable damage to roads, especially those with weak foundations, and they are unable to pass over many bridges. They completely block narrow roads, and as they cannot shunt the train of trucks they are drawing backwards, some awkward situations occasionally arise. For these reasons heavy traction engines have been discarded for military purposes, and those at present in the Army are gradually being sold.

Light steam tractors in general design follow closely on the lines of the traction engine. They weigh about 6 tons and draw a gross load of from 7 to 8 tons.

Light tractors, owing to their comparatively small axle weights and large driving wheels, are capable of moving over unmetalled surfaces.

As in a traction engine, one of the most useful features of their design from a military standpoint is the wire rope winding drum. By the use of this almost indispensable device they are able to haul their loads up steep inclines and over soft ground and extricate themselves and their trucks or wagons if stuck. They can be quickly uncoupled from the vehicles they haul; and it would often be possible, especially on the lines of communication, to allot each tractor two or more trucks or trains of wagons and to arrange the transportation of stores so that one truck or train is being loaded at one end, while the other is being off-loaded at the other end, and the tractor is drawing a third train between the two points.

This system enables a tractor to do the maximum amount of work, and if double crews are provided, it can be employed for 20 hours a day, leaving 4 hours for cleaning and adjustments.

But the utility of the light tractor does not end here. It can be used as a direct substitute for horses in drawing our present wagon equipment, and this fact will probably affect the future policy for some time so far as the Regular Army is concerned, as our stock of military wagons is considerable.

The power of the tractor to replace the horse for transport purposes compensates to a certain extent for the shortage of the latter, and obviates the necessity of scrapping our wagon equipment, while at the same time obtaining the advantages of Mechanical Transport.

Three G.S. wagons can be drawn by a light tractor, so that one tractor replaces 12 horses. These wagons can be uncoupled and the drawbar replaced by a pole in a few seconds, making the vehicle ready for horse draught.

The I.C. tractor.—These light tractors weigh about 7 tons with fuel and water on board, and can have a gross load of 7 to 8 tons. I know of none in commercial use. Those in the Service have been manufactured by Thornycroft & Hornsby. Their fuel is motor spirit and paraffin, and they have a radius of action of 120 miles at an average speed of 5 to 6 miles an hour on good roads.

All these vehicles have been built to War Department specification, and they will prove a great improvement on the steam tractor if expectations are realised.

Motor Lorries or wagons have, as I have said before, the engine, and body carrying the load, mounted on the same axles. Nearly all heavy lorries are propelled by steam, but the lighter vehicles, motor vans and motor cars, are almost invariably propelled by the I.C. engine. A trailer is usually drawn

by the heavy steam types, but the load is primarily on the lorry itself.

The carrying capacity of lorries varies from 1 to 5 tons, while those which draw a trailer carry about two to three tons extra on it.

The ordinary commercial lorry is not fitted with a winding drum, but the light tractor is always so fitted.

Though suitable for good roads, experience has shewn that lorries quickly get stuck when driven over unmetalled surfaces, especially if the weather has been at all wet.

This is due to the small diameter of their driving wheels, and because the weight of the greater part of the load is carried on the back axle.

When the wheels start skidding, a lorry, unlike a tractor, cannot be detached from its load. Once in difficulties it is usually necessary to unload it unless some means can be found to haul it out. The unloading of a lorry with a crew of one or two men, and the subsequent loading, takes a long time, and much delay is caused.

Motor Vans.—These really belong to the lorry type. For the purpose of classification, however, we will consider as belonging to this class, all vehicles, except motor cars and bicycles, with less than one ton carrying capacity. Motor vans are invariably driven by an I.C. engine, and there are many in commercial use.

I consider a motor van more suitable than a lorry for military purposes. Neither type of vehicle can leave a metalled road if the ground is at all wet (and by leaving the road I mean driving on to the grass at the side of it to allow other vehicles to pass) without danger of getting stuck. In the case of a motor van, however, the delivery of only one ton of stores would be delayed, but if a 'bus chassis was employed as a lorry, three tons would be delayed, and the delay would probably be longer, as greater difficulty would be experienced in extricating the larger vehicle. The motor van is also slightly more handy than the lorry. Motor cars, motor ambulances and motor bicycles will be used more and more in every army as time goes on, but I do not think the armoured motor car will ever be adopted as a fighting machine. Motor cars will probably be used for carrying the machine guns for cyclist battalions.

The Road Factor.—Mechanically propelled vehicles require good roads more than any other type of transport.

The best Mechanical Transport vehicle in the world will very soon develop defects in some part or other if driven over a bad road surface at anything approaching the speed at which it could be driven over a good road. Even at a reduced speed vehicles of the lorry type with steel tyres will suffer abnormally. Tractors, owing to their larger driving wheels, suffer less. Rubber tyres will mitigate the evil. But whichever class of vehicle is used, if its daily work takes it over roads which are

full of holes and ruts, special arrangements will have to be made for carrying out repairs. If this is not done the transport will fail.

The mobile workshops of the Divisional Transport and Supply Parks can execute all running repairs, but the capacity of this shop is limited, and it may not be able to execute repairs quick enough to keep the requisite number of vehicles in action, if the condition of the road surface is very bad.

In these circumstances the reserve of vehicles must be increased and steps should be taken to improve the road as much as possible.

The axle weight of a motor vehicle and the diameter of its driving wheels are important factors, both on account of wear and tear to the roads and strength of bridges.

I am not prepared to say which does the most harm to the road surface, a lorry carrying three tons moving at 10 miles an hour, fitted with the usual small rubber tyred driving wheels, or a light tractor with its large broad metal driving wheels moving at five miles an hour and drawing a five ton useful load; the back axle weight of both these types of vehicles being identical, namely, about 4 tons 10 cwt.

But it must be remembered that a loaded five ton lor represents a concentrated weight of 10 to 12 tons. A light tractor and its loaded truck represents two concentrated loads of seven tons each. By using its wire rope a tractor could pass over a bridge capable of carrying seven tons without difficulty, but it would be necessary in the case of a five ton lorry to partially unload it and carry the stores over some other way.

A lorry, like an ordinary railway locomotive, can only ascend a certain gradient with a certain load, and if the road surface is bad, the weight it can take up a hill must be considerably reduced.

In consequence a steep hill on the line of march will often seriously affect the carrying capacity of a convoy of lorries.

With tractors it is different, as their wire rope can be quickly brought into use. The leading tractor uncouples and ascends the hill, paying out its wire rope, the end of which is attached to the leading wagon of its train; the next tractor prepares to do the same. When the first tractor has paid out all its rope its stops and winds up its train of wagons, and the second tractor follows close behind the first tractor's train, in its turn paying out its wire rope, and so on. In this way a convoy of tractors can be taken up a hill at about one and a half miles an hour.

Should the road up the hill be a winding one, and it is only possible to use the wire rope for short distances, two tractors can be coupled tandem wise to a loaded wagon. This method takes longer, and is more detrimental to the road surface, but it would be quicker than partly unloading a convoy of lorries, to enable the hill to be negotiated, and then sending back empty lorries (which would have to be unloaded at the top of the hill) to bring up the stores previously unloaded at the bottom.

Before I go further, let me make a brief recapitulation. We have seen that the I.C. vehicle as regards radius of action and speed is far superior to the steam vehicle, but the latter is more reliable, easier to repair, and will stand rough handling.

All mechanical transport vehicles, by which I mean those intended to carry stores, belong either to the tractor type or the lorry type.

For five ton loads the light tractor which hauls its load is to be preferred for military purposes for the following reasons:—

The weight of the engine and load is distributed and not concentrated on two axles as in the case of the lorry, and the tractor can easily be detached from its load.

If, therefore, a tractor gets on soft ground, say at the side of a road or in a camp, it is not so likely in the first instance to get stuck, and it can almost always extricate itself without delay if in difficulties.

If the ground is so soft, or the road so steep, that a tractor cannot haul its load by the direct action of its driving wheels, or if it has to pass over a bridge which is only capable of carrying a limited concentrated weight, it can quickly uncouple from its load, move forward alone, and then pull its load after it by means of the wire rope winding gear. A lorry of similar carrying capacity would have to be completely or partially unloaded in the same circumstances.

Our experience has also shown that the heavy type of Mechanical Transport vehicle, by which I mean vehicles carrying loads of about five tons, can be best employed in rear of the transport and supply columns, and should be worked apart from horse transport. Light vans with a carrying capacity of not more than one ton, or 30 cwt. lorries, would probably prove suitable for delivering supplies to the regimental transport.

To sum up—the light tractor is the most suitable vehicle for heavy loads and for moving over unmetalled surfaces.

When it is *not* necessary to move off a metalled road surface, the lorry and motor van are efficient and suitable.

It is undesirable to have more than five tons of stores dependent on a single power unit.

Before dealing with our own scheme for obtaining Mechanical Transport on mobilisation and our peace organisation, I will briefly state what other nations are doing in this respect.

The Austrian army employ an I.C. lorry capable of carrying a load of from 2 to 2½ tons at a rate of 5 to 7½ miles an hour. The fuel used is benzine, which is produced in Austria.

They also have a heavier type of lorry-tractor driven by a benzine motor, which carries a load of two tons, and in addition draws two or three wagons, which together bring up the carrying capacity to 8 or 9 tons.

The daily march for this type of vehicle is about 40 miles.

About 20 of these trains were employed for last year's manœuvres, as well as several traction engines and a mobile workshop.

The Austrian Mechanical Transport is organised into columns under the command of transport officers, and each column carries one day's supplies for a division.

The experience of the Austrian army with the Mechanical Transport vehicles they have tried, is that they should not be employed with horse transport, but in rear of it. They consider Mechanical Transport specially suitable for Lines of Communication, and fully realise the importance of establishing fuel depôts, stationary and mobile repair shops, and of having a reserve of motors ready to replace any that break down.

The Austrian army possess a Motor Volunteer Corps organised for staff work on somewhat similar lines to our Army Motor Reserve.

The Germans, as might be expected, have tackled the Mechanical Transport problem in their usual thorough manner, but almost regardless of expense. They have been experimenting for a long time with various types of vehicles.

In the 1907 manœuvres, lorries and tractors were used for supply purposes. Premiums were paid for the most satisfactory vehicles. These premiums were given with a view to encouraging those firms which produced the best vehicles from a military point of view. The success of the motor bicycle during these manœuvres led to the formation of a motor bicycle corps.

At the siege manœuvres at Posen in the same year, sixty mechanical transport vehicles were used to transport "material" from Berlin. The light column consisted of lorries carrying a useful load of 1½ tons and a certain number of road trains. The heavy column consisted of traction engines, each hauling two or three wagons, the useful load for each train being 13½ tons, also a tractor hauling a mobile workshop.

These trials lasted seven weeks, and were very severe, but no adequate arrangements had been made for the supply of fuel and water en route, and consequently many delays were experienced.

The light column as a whole was considered to be the best, although the English traction engines gave excellent results.

On account of the importance of ascertaining the behaviour of Mechanical Transport under the unfavourable conditions which are met with in winter, the Minister of War organised a trial to be run during November and December, 1907. The roads to be traversed were in many cases very bad, and sometimes covered with ice. Unfortunately no practical conclusion was arrived at, as the trials terminated abruptly at a very early stage, it being stated that the melting snow on the roads rendered it impossible to continue the test.

The German authorities realise that whatever type of vehicle they may consider best for military purposes, they, like every other nation, must depend primarily on the vehicle which is the most popular commercially. This is undoubtedly the I.C. lorry, the steam lorry not being manufactured in Germany to any extent.

They have therefore induced the leading lorry manufacturers to modify their standard type of vehicle as regards design, material and workmanship, so as to be as suitable for military purposes as possible.

Anyone buying a vehicle complying with the military requirements and manufactured by one of the selected firms who will undertake to maintain it during a period of 5 years in a state always fit for military use will be paid a subsidy. In the first instance, this subsidy consisted of £200 down for each vehicle when it was taken over, and a working subsidy of £50 a year for 5 years, and it is worthy of note that the sum of £200 represents about the difference in price between a 5-ton steam and a 5-ton I.C. vehicle.

The vehicles were liable to be called out for manœuvres, when the owners were paid a fuel allowance.

The drivers invariably belonged to some category of the reserve, and were paid the usual rates.

The type of commercial vehicle favoured by the German War Office is an I.C. lorry carrying 4 tons and capable of drawing a trailer with an additional 2 to 4 tons. The maximum speed on the level with iron tyres to be 7½ miles an hour, and with rubber tyres 10 miles an hour. The mean speed to be 6 miles an hour.

The train must be able to climb, on metalled roads, any gradient up to 1 in 8 with full load and loaded trailer.

The radius of action to be 156 miles. German fuel to be used if possible. The lowest part when loaded to be 11 inches from the ground. Sufficient protection from weather to be provided for the drivers, the wheels to be so fitted that it is possible to travel along roads covered with ice and snow, three complete sets of anti-skids being provided; the trailer to be as light as possible, with a complete lock under fore carriage, and to be fitted for horse draught.[1]

The military authorities are empowered to examine subsidised vehicles, as to their fitness for military service, as often as they like.

The Germans also make extensive use of motor cars, and have experimented with an armoured type, which has proved a failure. The Germans are behindhand in the employment of mechanical transport for commercial purposes, and the light tractor which is so popular in this country for a certain class of work is almost unknown in Germany.

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[1] Other modifications in design to create uniformity have recently been insisted upon for all new vehicles.

The Italians have for some years used traction engines for hauling heavy armament and building material, but they have been discarded as too heavy. Various experiments between 1898 and 1907 proved inconclusive, and a waiting attitude was adopted till November of last year, when they issued a scheme for a competition. The competition is limited to I.C. lorries of 1 ton and 2 tons carrying capacity, burning benzine, alcohol or benzol, and manufactured by Italian firms.

Some of the details of the specification are as follows: The driving wheels must have metal rims and be chain driven. (The Italians, like Germans, prefer metal to rubber tyres for these military vehicles.) All parts must have a clearance of 10 inches above the road surface when the vehicle is loaded. Enough fuel must be carried for 125 miles. The principal parts must be accessible with a view to their examination and repair. Arrangements must be fitted to the side of the vehicle for the attachment of ropes (so it is clear they anticipate getting stuck). The lorries must be able to negotiate grades of 1 in 7 on a macadamised road surface. The maximum ordinary speed to be 12½ miles an hour on the level.

The total number of vehicles to be ordered may amount to 200 of the light pattern and 400 of the medium, and the sum of £140,000 has been charged to their 1910-11 Estimates.

The Italians have organised a Motor Volunteer Corps, and have for the past two or three years hired lorries from civilian sources to supplement their military vehicles during manœuvres. A mobile workshop consisting of 1 lorry with tools is attached to each section, by means of which repairs can be carried out on the spot.

France.—In 1897 the French Minister of War formed a permanent Mechanical Transport Committee, composed of technical officers of all arms. This committee attended all trials of motor vehicles. From 1900 to 1905 various types of vehicles were experimented with. During the 1906 manœuvres, in addition to motor cars requisitioned for the use of the staff, a number of lorries were employed for carrying water.

In 1907 the Automobile Club of France, at the request of the Minister of War, collected forty lorries, with a carrying capacity of at least two tons each. These vehicles were used to carry supplies for the 18th Corps; Bordeaux railway station was selected as a supply centre. The lorries had to traverse from 60 to 90 miles daily to reach the regiments. The various convoys left Bordeaux each morning, and on arrival at the place indicated in their orders they were met with fresh instructions, giving the exact spot at which each lorry had to deliver its load. They returned empty the following day.

This lorry service worked well and gave great satisfaction to the military authorities; but the conditions were not those that would exist in war. The manœuvres were of short duration. The lorries were new and consequently not likely to need repairs. The drivers were picked men and the roads were in a perfect state, neither cut up or blocked with vehicles.

The 7th Corps employed three Renard trains, which did the work allotted to them satisfactorily. These trains consist of a vehicle called a locomotor, on which is mounted a 75-H.P. I.C. engine, which transmits power mechanically not only to the driving wheels of the locomotor but to one pair of wheels in each of the trucks behind it.

Commercial motor vehicle trials have been almost an annual feature for the past three or four years, and these have been closely observed by the military authorities, who give substantial prizes for the most suitable vehicle from their point of view.

In the trials which took place in November last, no less than 1 General, 1 Colonel, 1 Major, and 9 Captains were appointed judges, while each vehicle had an officer as an observer.

It is significant that the largest class consisted of lorries with a useful load of from 2 to 3 tons.

France, like Germany, will probably adopt for its Army the most popular home-made commercial type of motor vehicle, and the military authorities have called for tenders with a view to obtaining a vehicle equally suitable for peace and war. They realise that the requirements are far from being identical.

Private firms and individuals who undertake to place their vehicles at the disposal of the military authorities in the event of mobilisation receive grants, and a credit of £40,000 has been passed by the Budget Committee.

Now turning to our own Army. So far as I am aware we are not behindhand in the utilisation of mechanical transport.

In peace time the supply of spare parts for military motor vehicles devolves on the store section of the Mechanical Transport Inspection and Store branch of the Army Service Corps.

This branch, considerably augmented, will carry out the same duties in war, and their task will be an arduous one.

We have at present in the Army Service Corps 7 Mechanical Transport Companies. One company is allotted on mobilisation to each division and one is a depôt company.

There is a Technical Mechanical Transport Committee at the War Office which meets constantly and watches very closely all new developments likely to be of military use, and constantly carries out comparative trials and tests.

Of the Mechanical Transport Service Companies, 4 are on a higher establishment peace basis, with 16 light tractors, 2 lorries, and a small motor car per company, and 2 are on a lower establishment with 8 light tractors, one lorry and a motor car. One light tractor in each company will be fitted with a crane for lifting heavy weights.

These units have or will shortly have the necessary machine and hand tools to enable them to carry out expeditiously all ordinary running repairs. The machine tools will be electrically driven.

On mobilisation each service company forms the two Mechanical Transport Sections of a Division Transport and

Supply Park, and its tools are placed in wagons, in which they can be operated, and form a mobile workshop. The efficiency of the Mechanical Transport vehicles of a division will depend largely on the rapidity with which repairs can be executed by this mobile shop.

Our present strength in light tractors is 43.

The war establishment in tractors for six Divisional Transport and Supply Parks is 276. To this number it will be necessary to add 10 per cent. as first reinforcements, making a total on mobilisation of 304. We therefore, at our present strength, depend on civilian sources for 224 tractors.

For the past three and a half years the War Department has been enrolling motor vehicles for the Divisional Transport and Supply Parks, and at the present time a fair number of light tractors and five-ton lorries have been subsidised. All the tractors are driven by steam.

The following is the detail of the scheme. Motor vehicles are enrolled for one year if, after inspection, they are found in a fit condition for military service, and they are re-enrolled annually so long as they are efficient.

All enrolled vehicles are liable to be purchased on mobilisation.

Those owners who undertake to hire their vehicle to War Department for manœuvres receive a subsidy of £2 per annum (the German subsidy is £50), while the rest get £1 per annum.

When hired for manœuvres the rate is £4 a day, with fuel and lubricating oil thrown in. This is very good pay, and there is no doubt that the large majority of owners who have enrolled their vehicles have done so in the hope that they will be hired.

It will be seen that our policy is to induce owners of the ordinary commercial vehicle to enrol them with War Department for peace and war purposes. The scheme does not lead to a uniform type of vehicle being produced which is as suitable for commercial purposes as the existing types of vehicle, but which would be much better than the existing type of vehicle for military purposes, and this is its *great* drawback.

We, like every other nation, have to rely on civilian sources for the bulk of our Mechanical Transport on mobilisation. It would be quite out of the question to fill our mobilisation stores with vehicles which would probably be obsolete before being used.

Now there is no doubt that each type of transport is specially suited for certain conditions and circumstances, and equally unsuited for other conditions and circumstances. Let us make up our minds what military work each type of commercial motor vehicle is suited for; let us then decide on the numbers of each type that we want on mobilisation. Having done this let us see how these types can be modified and improved so as to be as suitable for military purposes as it is possible to make them, and then let us pay a substantial subsidy to those firms who will purchase for their work the

type of vehicle we want, and keep it in thorough repair. The demand created would soon induce manufacturers to produce the article wanted, and I think we would get good value for our money.

There are a sufficient number of light tractors in the United Kingdom to meet our *present* requirements, but with the low terms offered by us only a comparatively few owners can be induced to enrol their vehicles.

The five-ton steam lorry, which is capable of drawing a trailer, is the vehicle in most general use in this country for heavy transport work. It is comparatively cheap, very efficient, reliable and economical, and it is doubtful if it will be superseded by the I.C. lorry. It is typically British, and there are at least 1,500 in the United Kingdom. The I.C. lorries are, however, being more and more used for loads of three and four tons, but the supply, excluding motor 'buses, is still limited, and we would have to depend on the steam vehicle if lorries of 5-ton carrying capacity were wanted in any numbers for military purposes.

The reason why the lorry type is more used than the tractor is because it is the more convenient vehicle for town work, and of course, the work of the great majority of users is in or about towns.

The light tractor on the other hand is mostly used by builders, brick manufacturers, farmers, and in the lumber trade. Namely, for work which occasionally necessitates a departure from the hard high road, as is the case for transport employed for military purposes. If the present legal restrictions were removed and the light tractor was permitted to draw up to three wagons, it would add to its popularity, as horse-drawn wagons could be employed as trailers.

In England we have many firms who produce a first-class steam tractor and steam lorry, but only one or two have ventured on an I.C. tractor. There are also several firms manufacturing I.C. lorries.

The total supply of motor vehicles of various sorts should be quite equal to meet all our demands in case of war, and the military authorities now have power to impress them on mobilisation being ordered.

The employment of Mechanical Transport must soon spread to such organisations as ammunition columns. It will be interesting to see what type of self-propelled vehicle will be employed.

If light tractors were used it would undoubtedly be the most economical and efficient way of effecting the change, as one light tractor can easily draw three of the general service wagons with which this unit is equipped. Tractors, as I have said before, can move off the road more readily than any other type of motor vehicle, and if necessary, the wagons they haul could during an engagement be sent to the front by the teams which bring the empty wagons to the rear.

I also think that the Cavalry Division must shortly include in its organisation a Transport and Supply Park of fast motor vehicles. I think the carrying capacity of these motor vehicles should be limited to one ton or 30 cwt. This, of course, necessitates a greater number of vehicles than if a larger type were employed, but the smaller vehicles would be able to scatter more and tap sources of supply quicker.

Their speed of 15 miles an hour might even in favourable circumstances enable them to escape from hostile Cavalry Patrols when employed in requisitioning supplies; and if individual lorries were captured only one ton of carrying capacity would be lost.

They are also comparatively handy, and this is important, as when the Cavalry Division is concentrated for battle its park would probably have to be sent back to a depôt on the line of communication for supplies, and in its line of march it would most likely have to pass through one or more Divisions.

In conclusion, I will make a few remarks about the practical employment of Mechanical Transport.

Like any other form of transport, it has its limitations, and these should be thoroughly understood by Staff Officers in order that it may be utilised to the best advantage.

The first thing to be seen to is that efficient means are available for carrying out repairs and adjustments. With animals nature repairs wear and tear but with Mechanical Transport repairs can only be efficiently done by a competent staff of Artificers provided with suitable tools.

It is only by promptly repairing minor defects that the reliability of mechanical vehicles can be more or less assured, and every facility should be given for this purpose.

It is a good plan to work Mechanical Transport vehicles in pairs, so that one vehicle can assist another in difficulties.

As far as possible motor vehicles of the same type and speed should be detailed for a convoy.

All convoys which proceed beyond a day's march from their workshop should be accompanied by artificers with tools, and skidding jacks, blocks and tackle should be taken, especially if it is a convoy of lorries.

The supply of fuel has to be most carefully considered, and special vehicles should be detailed for this purpose.

Field Service Regulations, Part I., under Rules for Transport on the March, lays down that "with mixed transport, if the situation admits of the column opening out, the fastest class of transport should start first." I think it ought to be the other way about, and the starting time arranged so that they all reached camp together. The fastest animals, etc., could then have the maximum amount of rest. If this rule is adopted for Mechanical Transport, namely, the despatch of the fastest transport first, the advantages of its mobility would be lost, as it would quickly overtake the troops in front of it.

If the tactical situation admits of it, orders for Mechanical Transport should simply indicate a point at which it is to

arrive at a certain time, and if necessary, stating the route to be followed. The officer in charge of Mechanical Transport could then arrange his own time for starting. He knows the speed of his vehicles better than anyone else. Escorts for mechanical transport convoys will have to ride on the vehicles, or be mounted on horses or bicycles.

Again, under Parking Guns and Vehicles, we are told Mechanical Transport vehicles require special arrangements. This as a rule is the case, but the arrangements depend largely on whether tractors or lorries are employed.

The former can be parked in any good well-drained grass field, with a fairly easy entrance, and little or no difficulty will be experienced.

If lorries are used it is best to park the vehicles in column of route at the side of the metalled portion of the road, but this is seldom possible without interfering very much with other traffic. It is, however, the only safe method to ensure a punctual start the next day.

I have often seen loaded lorries tempted into a nice dry field at the end of a day's march. During the night it has commenced to rain, and the next morning their small driving wheels, owing to the heavy axle weight thereon, have sunk into the ground. The rain has made this wet and greasy, and the result is that whenever an attempt is made to move, the driving wheels simply revolve without moving the vehicle.

Then again a Mechanical Transport convoy may be given sudden orders to retreat. How is it to be turned? If the ground is dry and there is a convenient field, farmyard or private house with an entrance and exit gate into its grounds, the convoy should be sent in at one gate and out of the other, each vehicle turning in the opposite direction on again reaching the road. Lorries, however, cannot enter a field if wet, but if they are not drawing a trailer they can be rapidly turned at any convenient cross road.

A convoy of light tractors drawing lock-under trucks can often be quickly turned on the road itself as follows:—

The convoy should be halted well to the side of the road with a distance of 10 yards between each train. Every tractor will then uncouple and turn in the space in front of it and move alongside the truck it is drawing, but facing in the new direction. The drag chains will then be connected to the draw bar of the truck, and on a given signal the tractors will pull slowly forward until all the trucks are turned, they will then unhook the drag chain and couple up in the usual way and proceed on their journey.

With well-trained crews and lock-under wagons, a convoy can be quickly turned on a comparatively narrow road.

Lorries, however, can seldom be turned as easily as a tractor where there is no cross road and if they leave the metalled surface of the road they are liable, in wet weather, to get into difficulties.

RASPLATA.

("THE RECKONING.")

By Commander VLADIMIR SEMENOFF, Imperial Russian Navy.

Translated, by permission of the Author, by L. A. B.

(Continued from May JOURNAL, p. 626).

CHAPTER IV.

EXERCISES AND OCCUPATIONS DURING THE VOYAGE—GREAT FISH BAY AND THE INDIGNANT "LIMPOPO"—ANGRA PEQUENA AND THE FRIENDLY MAJORS—NEWS OF THE CAPTURE OF HIGH HILL BY THE JAPANESE, AND OF THE SURPRISES PLANNED AT DURBAN—OFF THE CAPE OF GOOD HOPE—GALE—ON THE COAST OF MADAGASCAR—NEWS OF THE DESTRUCTION OF THE FIRST SQUADRON—THE ADMIRAL AND THE HOME AUTHORITIES.

IF the time we spent at anchor could be characterised as the "black fever" or "feast of coal"—as it was called in the mess—the time at sea could also in no way be called a time of rest.

Apart from the fact that there was much which had been left unfinished when the ships were being built and equipped, and that in consequence there was work of one kind or another going on day and night in every part of the ships: this or that had to be taken to pieces, refitted or altered, put together again; the crews had to be trained; they had in fact to be put through the training which they had not received in time of peace, notwithstanding the reports as to "complete preparedness for war," the assurance that "everything was in the most perfect order."

Naturally our first object in our homeless condition was to get forward, but as the incessant break-downs, first in this ship, then in that, delayed us so much and forced us to spend our "elixir of life"—coal—to no purpose, the practising of tactical movements was out of the question, dependent as they were on the expenditure of time and coal. Even the Admiral, who did not know the meaning of the word "impossible," did not risk tempting fate in such a manner. On the other hand, everything was done that was possible without materially retarding the progress of the squadron.

The *personnel* was kept hard at work. The daily exercises averaged about six hours; in the evenings the officers were kept busy in the mess, at night the bugle often sounded the alarm.

On 22nd November the Admiral issued an order which laid down that in each ship, on the day preceding any general battle exercise, a scheme for the same was to be worked out under the personal supervision of the second-in-command, according to the captain's general directions.

It was laid down that the scheme was always to represent a fleet action; it was further ordered that "after the movements of battleships, cruisers and torpedo-craft on both sides during an artillery duel at medium ranges had been laid off on paper, it was to be stated which of the hostile ships employed in the scheme would be on the starboard side and which on the port side of their own ship during the forthcoming general exercise. Next, it is to be decided, according to the conditions of the scheme, what enemy's ships are to be considered as the opponents of the two broadsides; for each group of guns, as well as for each gun in the group, the times for opening fire, the bearing and distance of the object and the nature of projectile, are to be laid down beforehand. In more complicated cases, where both sides may be engaged, the precise time and locality where each hostile projectile is supposed to hit the ship and the damage done: losses of men, fires, damage to leads, connections, mechanisms, under water hits, etc., are to be indicated.

"In accordance with the general situation of the moment, orders are to be sent to the individual guns dealing with such losses in *personnel* and *matériel* as may hinder the due working of the gun or cause its temporary silence.

"*The details of the scheme must not only be known to the officers who worked it out, but also to all lower ranks who are concerned with carrying it out, such as gunlayers, all petty officers, electricians, torpedo men, magazine and shell room parties, etc., including the doctor's parties.*"

The order concluded as follows: "The confusion which is bound to take place during the first exercises must not be minded, but the task completed and repeated. Exercises of this kind are to be started at once, and the schemes executed sent in to my office once a week or on anchoring."

It is needless to say that this order was carefully complied with, that the crews made the greatest efforts to accomplish the task set them by the Admiral. There was no lack of honest zeal. Everyone did his best. But could such a battle scheme, worked out on paper, though admirably carried out during the exercise in all its details, make up for the lack of experience and give us that mastery of the craft, which, after all, can only be the result of years of practice at sea in a squadron, both as regards target practice and manœuvring?

True it is always better than nothing. This reminds me of a pungent remark made by the Admiral who commanded the Black Sea Fleet in 1898, when the staff gunnery officer reported that there was no more ammunition available for further target practice, as the regular allowance had already

been expended, and all that could be done would be to fire out of rifle barrels fixed to the guns.

"Even this is always something," said the gunnery officer. "The gunlayer, it is true, only fires the rifle, but he has to work the gun. Always better than nothing."

"Then you are a believer in the saying: 'Better a louse in the soup than no meat at all,'" replied the Admiral, who was rather fond of quoting coarse proverbs. "I am not. Better nothing in the soup than such a substitute."

On 4th, 5th and 6th December exactly the same weather; overcast sky and heavy swell. The south-east trades, which blow straight from the Antarctic Seas, produce a quite different climate on the west coast of Africa, south of the equator, compared to that in the torrid zone in the northern hemisphere.

On 6th December I wrote in my diary: "Latitude 16°, temperature at 9 a.m. 63° F. Slept under a warm blanket. After three weeks of turkish bath there is much grumbling at the terrible cold."

At about noon on 6th December we were off the entrance to Great Fish Bay. Here our colliers were already waiting for us, rolling about in the swell. Capital fellows, these Germans! They are as punctual as chronometers.

At 1.30 p.m. we anchored near the entrance of the bay, protected against the swell by a sandy spit, and more than 3 miles from the mainland. We did not steam in any further, because we had sighted a rather quaint-looking little vessel flying the Portuguese ensign, which was evidently on the look-out for us. It was clearly the river gun-boat *Limpopo*, built in the "'nineties," armed with one 3-pounder Q.F. and a few machine guns. That was not too alarming, and therefore when her captain came on board the *Suvoroff* and requested the Admiral to leave at once, the latter pointed out quite calmly and amiably that we were more than 3 miles from any coast-line belonging to Portugal, that is, outside territorial waters, and that, therefore, we were our own masters here.

"But you are anchored in the bay. That is the point."

"In this respect we can only thank the Lord that He made the entrance of the bay wider than six miles, and that between the two strips of Portuguese territorial water, the neutrality of which is, of course, sacred to me, He has placed a narrow strip of sea, open and accessible to all."

The *Limpopo* was indignant, and steamed off to Benguela to enter a protest.

"Good-bye little one! Pleasant passage!" we called out from the *Suvoroff* to the gun-boat, which was slowly receding to the northward, rolling gunwales under. "By the time you crawl to Benguela across this swell, and get back with an ultimatum, not one of us will be left here."

Of course, if an English squadron had been here, and with it an official from Benguela, the conversation might perhaps have taken another turn.

International law, of which there is so much talk nowadays, is, after all, hardly more than an attempt to legalise that which is arbitrary, an endeavour on the part of learned lawyers to maintain their authority, to find a justification for the might which cares for no right.

The following day, 7th December, at 4 p.m., we weighed and sailed for Angra Pequeña. As regarded the weather this passage was in marked contrast with the preceding ones. The south-east trade winds of the South Atlantic change to south-west along the coast, and then differ greatly from the mild north-easter of the northern hemisphere. At sunrise the sky was generally covered with low, fast travelling clouds, and the breeze freshened; about midday it cleared; in the afternoon the breeze lulled; by sunset the sky was again overcast and the breeze freshened up. From about midnight till sunrise it was nearly calm and clear overhead. In a word, the weather changed every six hours: now bearable, then again disagreeable. Even in the middle of the day the temperature did not rise above 68° F.

On 11th December, at 1 p.m., we anchored at Angra Pequeña. We remained in the western part of the bay, which is separated by a narrow, rocky peninsula from the eastern portion, where the German settlement is situated. The colliers were awaiting us, but we were unable to begin coaling on account of the weather—it was blowing hard from the S.S.W., force 8,[1] and a heavy sea came rolling right into the bay. On the other hand, we received a warm welcome from the local authorities.

The chief of the staff, who had gone ashore to gather information (in the western part), reported on his return that the Governor (whose military rank was that of Major), had received him in a very friendly manner, and in reply to a diplomatic reference to possible difficulties which might be raised as to the stay of the squadron, merely opened his eyes very wide and asked: "What squadron? Where is it lying?" He went on to state very decidedly that as he could see no ships from the part of the bay where he resided, as he did not possess a fleet for the purpose of patrolling the coasts of the colony, and as he was a soldier, and as such it was neither his duty nor his intention to go cruising about in a native boat, least of all in weather like the present, he would be quite unable to take any action, even if a battle were being fought behind the next point of land.

On this occasion it was made more clear than ever that the very marked state of mental depression, which was general in the squadron, was not the result of fatigue after superhuman labours, of bodily ailments or privations. When the officers (and, of course, also the "lower deck," through the servants) heard of the Major's answer, and realised that not only were

[1] The strength of the wind is calculated according to a scale: 0 = calm, 12 = strong gale.

we not hounded out, but not even rated for having come in at all, everyone revived and became cheerful—all the more when a rumour reached us that the Major had merely used some very forcible German about our having snapped up under his nose a large supply of fruit and vegetables which had just arrived from Capetown, having apparently been ordered by him for his troops. Whole legends arose around the "Major," and the word became a generic name.

The torpedo lieutenant, B——, declared: "As soon as the 'Major' gets over his repugnance to salt water and pays his call to the Admiral, I will undertake to introduce him into the mess and to welcome him with a beaker of the best in the name of the Russian Fleet. I hope, gentlemen, I may have your support."

"Of course—of course!"

"Don't make yourself too important, my friend. I am the mess president, and as such it is my business to receive the Major in the name of the rest," Commander M——, the second in command, broke in laughingly.

"So much the better, sir, if you will head the movement," B—— replied. "You may count on us. At last we have found a man who does not mean to put a spoke in our wheel. He must be duly honoured."

The Major's goodwill was most welcome, as the weather was decidedly against us. Towards evening on the day of our arrival the force of the wind (as measured by anemometer) rose to 10 in squalls. Towards 3 a.m. on the 12th the wind began to go down. We risked it, and started coaling, but at six in the morning it came on to blow again so hard, that besides the swell rolling in from seaward, the sea got up in the bay itself. The steamer from which the *Suvoroff* was coaling was nearly smashed up, notwithstanding all precautions taken, as our 12-pounders of the lower battery (main deck), which were secured on the beam outboard, went into her side like needles into a cork. The loss would not have been great if the steamer alone had suffered—we should have paid him his damages, and that would have been all; but the worst of it was that the guns themselves suffered—one, for instance, which had hit upon a particularly strong part of the hull, was bent 5° out of the normal on coming out again on the return roll. Of course the gun could no longer be fired. Coaling had to be stopped.

On 13th December there was the same weather. We tried to coal in launches, but unsuccessfully. By 10 a.m. all boats had to be hoisted up or in. It came on to blow such a gale that they would have been dashed to pieces against the ship's sides.

During the following night the wind went down a little, and at 5 a.m. we recommenced coaling in launches; it was still dangerous to get the colliers alongside on account of the swell.

At about 11 a.m. the "Major" called on the Admiral. Notwithstanding his military rank he was received like a

regular governor. He lunched with the Admiral. He was fêted in the mess. On leaving the ship, he was saluted, and the band played the German national anthem.

The men were sent aloft to cheer. (I beg pardon for this incorrect sequence, but I am quoting textually from my diary.)

Throughout the day and the greater part of the night our coaling went on in hot haste. At 3 a.m. on the 15th the breeze suddenly freshened up. Many people thought it was only a squall, and kept their colliers alongside. A good deal of damage was the consequence.

At seven in the morning it suddenly fell calm again. The chief of the staff and Colonel K——, ordnance officer on the staff, went on shore, as the Admiral's official representatives, to return the Governor's visit, and also to call on the senior military officer and the commander of an expeditionary corps sent here to fight the Hereros. Both these officers (again Majors) came off about midday to return the call, and were of course received no less heartily than the Governor had been.

On 16th December we had a flat calm all day, and a fog as thick as pea soup. Coaling was happily completed, the ships were washed down and prepared for sea.

A steamer arrived from Capetown. She brought newspapers and some verbal news. After repeated and determined attacks, the Japanese had at last captured "203-metre hill"—called "Vissokaya" by the Russians.

"Vissokaya? Where is that?" I was asked in the mess.

"It is in the north-west corner of our land front," I replied, without going into details.

"Vissokaya? What is that?" the Admiral asked me, in a curious tone of voice, giving me a searching look.

"It may mean the end of the fortress, but certainly the end of the squadron. The hill overlooks the entire harbour and roadstead."

On 17th December, at 9.30 a.m., full "over our ears" with coal, we left the hospitable but uncomfortable "Major's Bay" with the intention of getting to Madagascar somehow, without touching anywhere on the way.

It may be that until we reached Angra Pequeña the Admiral had not given up hope of being able to look into Delagoa Bay, if only for a few hours, so as to take in a certain amount of coal from our own collier transports, whilst engaged in negotiations with the local authorities, and until an ultimatum had arrived from their home government. But the news which reached him at Angra Pequeña compelled him to give up this idea altogether. Our agents reported (I am quoting the flag-captain's words) that a flotilla of sailing schooners, of the type of fishing vessels such as were built at Bombay, had assembled at Durban; these were armed with torpedo tubes—even the

name of the Japanese officer in command of them was given, Rear-Admiral Sionogu. By a singular coincidence the Admiral received, together with the above news, a telegram conveying a friendly communication from the British Government, according to which there were extensive sea fisheries off Durban, and stating that numerous fishing vessels would be met with in that locality, and that a repetition of the "Hull affair" was highly undesirable.

To this telegram (of which I do not know the precise wording) the Admiral sent a reply *en clair* (that is, one which could be read at all intermediate stations), to the effect that any Durban fishing vessels which might try to break through the squadron, or even approach it at torpedo range, would be ruthlessly destroyed; he requested that the British Government might be informed of this, so that the fishermen could be instructed accordingly by the colonial authorities.

I do not know what attitude our diplomatists assumed towards this telegram, but even if they suppressed it entirely, the Admiral's decision was known in London earlier than in St. Petersburg.

On leaving Angra Pequeña on 17th December, we found the weather out at sea to be unpromising: heavy clouds, squalls, and swell from the S.S.W. Towards evening the swell had increased so much that even the battleships were dipping into it enough to take seas over. On 19th December there was the same weather: heavy, irregular swell, up to 20 feet in height. The battleships dipped deeply into it, but only rolled very little. On the other hand, the cruisers were a pitiful sight, being shaken to pieces.

Towards 11 a.m. we sighted Table Mountain, and steamed all day in sight of the coast. A glorious country, which reminds one to an astonishing extent of the other end of the Old World—the North Cape. At 4 p.m. we were 7 miles due south of the Cape of Good Hope. From there we shaped course for Cape Agulhas, on the meridian of which we turned to the north-eastward at 2 a.m. on 20th December. We now entered the Indian Ocean: we began to make Easting and Northing.

During the night a fresh breeze sprang up from W.S.W. Towards morning the irregular, restless swell was replaced by a huge sea, which, luckily, ran in the direction of our course. At 4 p.m., with a clear sky, it was blowing with force 9 from W.S.W. The battleships pitched up to 7° and rolled 5½°. Occasionally the spray came over the bows.

Before sunset the squalls had the force of a gale. The sea got up steadily. About 8 p.m. we dipped bows under several times. The constructor on the staff was indefatigable in his rounds, holding consultations with the commander and the engineer in charge of the coal bunkers. Soon one heard blows of a mallet here and there; wedges were being driven under shores and struts, balks of timber and planks were being hauled about.

"Well, how goes it?"

"Oh, it is nothing at all. You remember, I told you: 'Only not from ahead.' From astern don't matter, we can stand that."

During the night there was an apparent improvement, but at sunrise on 21st December the breeze freshened up again. By midday it was blowing a whole gale.

I will not weary the reader with a description of the spectacle offered by the "elements let loose." The picture—thanks to the works of the great masters of the pen and pencil—is too well known for me to try and supplement it with my feeble strokes. I simply state: it was not "a fresh breeze," but "a whole gale," not as judged by personal impressions, but by the anemometer.

On this and the next few days I made so few notes in my diary, that I venture to reproduce these verbatim, without considering their incomplete literary shape.

"*Dec. 21st, noon.*—Sea heavier than yesterday. Rolling up to 7°. However, 20 miles current with us,[1] instead of against. The gale sends us along. If it does not increase any more it is an advantage for us. In weather like this we need not fear any Japanese adventures, and if we don't develop any defects it will have been a very useful experience for the ships. Clear sky. Seas up to 25 feet high.

"12.30 p.m.—Sea 35 feet high, possibly more. God help us! Can the ships stand this? Spray already over the upper deck.

"3 p.m.—We shipped a sea over the stern. It filled the staff office, and the spray came over the upper bridge. One of the starboard pulling boats smashed,[2] but still hanging in the falls.

"4 p.m.—The height of the seas has been measured—37 feet. Rolling up to 12° both ways. We are taking much water over the stern. And yet the wind seems still to be increasing.

"5 p.m.—The *Malay* developed defects in her machinery. She signalled that it was trifling and would be made good in twenty minutes. We continue. Stopping engines, waiting is impossible. She will get on all right. Her machinery is poor, but the ship is an ocean liner which has weathered many a storm.

"6 p.m.—The wind is not easing up, but the sea seems to be going down. We don't take over so much, but—or rather in consequence of this, the seas dash themselves against the ship's side like against a breakwater. P——[3] is looking anxious.

"6.35 p.m.—We have lost our starboard seaboat.[4]

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[1] In twenty-four hours.

[2] By the sea.

[3] The constructor on the staff—Politovsky.

[4] It was washed away by the sea.

"8 p.m.—The wind appears to be going down. *Russ* (*Roland*) reports by wireless that she can't keep the course[1] and is steering N. 56° E. (she is trying for shelter under the land). She was told to rejoin towards morning if the wind went down. *Aurora*[2] reported that she had lost sight of the *Malay* before sunset (apparently her engine defects not yet repaired). *Aurora* received orders to flash astern with her searchlight (the *Malay's* pendants) from time to time throughout the night.

"11 p.m.—The wind is veering from S.W. to S.S.W. Squalls. Generally force of wind 6. Less rolling. Every now and then we get water over the stern and the starboard side.

"*Dec. 22nd, noon*—Squalls, force 5 to 6, with rain, throughout the night from south-west, later south. Evidently the gale is abating. Sea rolling. Spray over from time to time. But how happy we are—how light-hearted we feel! One feels inclined to laugh. The ships had to pass through a bad time.

"Thank God! all has gone off well, and probably Admiral Sionogu is in the bays along the coast with his flotilla of sailing schooners, foaming at the mouth with rage. They have waited in vain. It is all over; the gale has prevented it.

"6 p.m.—*Russ* (*Roland*) has re-joined, and is now steaming along with us. Weather satisfactory.

"*Dec. 23rd.*—The wind fell altogether during the night, but in the afternoon it blew again from the south, force 5, with swell."

"*Dec. 25th.*—Since yesterday morning fine weather."

Now more detailed entries appear again, and therefore I stop quoting my notes and resume my narrative.

Towards evening of 24th December the *Kamtchatka* kept dropping astern and was unable to resume her station in response to repeated signals. And yet the squadron was only steaming 9½ knots. Finally she received the peremptory signal: "Report immediately why you can't keep station. Hold an enquiry and report who is to blame." The reply was: "Bad coal. Can't keep steam. Request permission to throw overboard 150 tons of coal. We shall be all right then."

The whole squadron was burning the same coal. Why was it suddenly so bad on board the *Kamtchatka* that she could not even keep up 9½ knots? Why was it necessary to throw 150 tons of coal overboard?

Only those who knew the Admiral well were able to estimate at its true value the outward calm with which he read this astounding signal.

"Tell him that my orders are that only the culprits are to be thrown overboard."

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[1] Apparently she shipped too much water over the stern.

[2] The rear ship of the squadron.

The *Kamtchatka* at once increased speed. She was lucky besides, for at 9 p.m. the *Suvoroff's* steering-gear went wrong, and for half an hour the squadron proceeded dead slow. The *Kamtchatka* therefore caught us up without having to throw overboard either coal or culprits.

On 25th December[1] we entered the zone of south-east trades of the Indian Ocean, and next day, after passing the southern extremity of Madagascar, we reached the regions of summer gales[2] and calms, which surround that island. In time we became very familiar with this climate, and did not suffer much under it, but at first it was extremely unpleasant: the sky is sometimes covered with thin clouds, sometimes hidden by fogs which have worked upwards; the sun neither burns nor blinds one—through this veil of fog one can look into the sun with the naked eye; there is no great heat, 85° F. at the most, but a percentage of moisture up to 96°. One can hardly breathe. The lungs absorb more water than air. At 2 miles it is very difficult to make out the colours of signal flags.

I forgot to mention that the hospital ship *Orel* had been sent on to Madagascar independently, so as to escape the trials which were in store for us; in doing so she called in at Capetown, where, under the red-cross flag, she was able to replenish all her stores of coal and provisions, and obtain all she required for the sick, untouched by the most Draconic rules of neutrality.

The southernmost point of Madagascar had been given her as rendezvous, so on 26th December we placed a cruiser on each bow as look-outs. The *Orel* was not seen. Evidently the gale was keeping her at Capetown.

Towards midnight on 27th December we experienced a violent squall from the north-east, accompanied by a gorgeous thunderstorm and a regular tropical downpour. At sunrise the wind went down. The atmosphere had been cleared a little. Breathing was easier. To the west we saw vaguely the jagged outline of the mountains along the coast (35 miles off).

When I greeted the Admiral that morning his appearance caused me serious anxiety. He, who was so indefatigable, of such good cheer throughout this almost insanely risky cruise, suddenly "caved in" when we had nearly reached our goal; he had all at once literally aged by several years. The cause was not far to seek. A man of his age cannot with impunity spend ten days on the bridge, without losing sight of the squadron, and only snatching occasional moments of sleep in a chair—this was the reaction.

Be this as it may, it was not only I who felt anxious—the whole *Suvoroff* was in an uproar.

"Is the Admiral well?" "What is the matter with the Admiral?" These were the questions with which the doctors were being bombarded.

[1] [This was really their 12th, as the Russian calendar is thirteen days behind.]

[2] In the southern hemisphere December corresponds to our June.

The doctors merely evaded their questioners.

About 11 a.m. there arose suddenly such a wild roaring and hissing in the ship, that it was only with difficulty one made out what one's neighbour was shouting into one's ear. I instinctively ran up on deck. The *Suvoroff* had left the line and was turning to starboard; the squadron was steaming along to port of her, the flagship flying the signal: "Disregard the Admiral's motions." In everyday language this means: "Go on as you are and pay no attention to me."

Evidently the pipe which takes the steam from the boilers to the main steam pipe was damaged in one group of boilers.

By about noon the damage was made good; the flagship overtook the squadron and resumed her place at the head of the column. Happily there were no victims. Three men had been within an ace of being scalded to death. A lucky chance and the presence of mind of a leading stoker saved them. Close to the scene of the accident there happened to be an open manhole door leading into a coal bunker. No sooner had the pipe burst and the steam begun to escape, roaring and hissing, than the leading stoker pushed his men into the manhole, jumped after them, and closed the door. When, after nearly an hour, these men, whom everyone believed to be long dead, emerged from their dark hiding-place into the daylight, there was general rejoicing. The Admiral praised them before the assembled ship's company for having shown so much readiness of resource, called them fine fellows, distributed money rewards amongst them out of his own pocket, and . . . in doing so suddenly lost the look of weariness and illness altogether, and appeared to be young once more.

"Did you see that? That stirred him up and he lives once more," the doctor said with a smile. "Such people only get ill and weary when their duties don't keep them busy."

28th December passed uneventfully.

At 8 a.m. on 29th December we were up to the southern extremity of Isle Sainte Marie, and entered the straits between it and Madagascar. At 11.30 we came to an anchor.

The straits are over ten miles wide; we anchored in the very centre, and could not therefore be formally accused of any breach of treaty.

About 4 p.m. the hospital ship *Orel* arrived from Capetown, and brought a momentous piece of news: the Port Arthur Squadron had been destroyed by the fire of the Japanese siege guns.

This news did not seem to me to produce any particularly depressing effect on the squadron. Apparently it had been fully expected for a long time by a good many people, who, however, had made up their minds never to speak about it. Of course I only speak of the older and more experienced. The younger officers, intoxicated by Stoessel's bombastic reports, and especially the men, believed firmly that on our arrival we should continue to be the "Second Pacific

Squadron," since the "First" not only existed, but would by then have repaired all damage received in action and join up with us as good as new. For these it was a bitter disappointment, but as ever, they did not ponder very deeply on the fate in store for them in a distant future. In this they were greatly assisted by their firm trust in the Admiral, which found expression in the words: "Our man—he'll do it."

At daylight on 30th December the *Russ* was sent off to Tamatave to obtain more definite news about Port Arthur, but especially as to Admiral Fölkersam's division.

It was only then that I found out that according to the original plan the place of assembly for the squadron was to have been Diego Suarez, a first-rate harbour at the north-east corner of Madagascar, the principal base of the French ships-of-war and commerce in these waters.

Upon Japan protesting, supported by England, our good allies gave way, and declared decisively that they were unable to receive their dear guests in their own house. It turned out that the Admiral received this intimation whilst we were still cruising down the west coast of Africa (I do not know exactly where). At the same time the Naval General Staff informed him that the French Government had no objection to the squadron assembling in the roads of Nossi-Bé, a suitable anchorage amongst the islands situated off the north-west coast of Madagascar; also that Admiral Fölkersam had already received orders to go there.

According to Flag-Lieutenant S——'s account to me, the Admiral was very much incensed at this autocratic decision of our "armchair strategists." Quite apart from the fact that by going to Nossi-Bé the distance to be covered was lengthened by 600 miles, the approaches to it from a purely navigating point of view were by no means very safe. This little-used part of the Mozambique Channel is badly surveyed; even the sailing directions recommend navigating it with every caution, and not by any means to trust to the accuracy of the survey; on the contrary, they point out that there may be coral reefs, rising up sheer from great depths, not marked on the charts. It would surely be foolish to risk the grounding, or possibly the loss of one, if not several, of the ships which were on their way to the seat of war. The Admiral replied that if Diego Suarez was closed to us, he intended to assemble the squadron in Sainte Marie Bay, to which place he requested that Admiral Fölkersam might be ordered.

We started coaling that same day, 30th December. Unfortunately there were only two colliers present (the remainder were at Diego Suarez), so that we had to coal in turns.

About noon the *Malay* arrived, having weathered the storm all right.

At 10 a.m. on 31st December the *Russ* returned from Tamatave. From the telegrams brought by her we heard that on 21st December two Japanese armoured cruisers and six

light cruisers had passed Singapore, steering to the southward; that two armed merchant cruisers had lately left for Mozambique (quite near), and—the most interesting item—that Admiral Fölkersam had arrived safely at Nossi-Bé.

I must here point out that Isle Sainte Marie (on which there is a penal settlement) possesses no telegraphic communication whatever, nor does Nossi-Bé (only savage places like these were of any account for us). To despatch a telegram a vessel had to be sent to Tamatave or Diego Suarez; but of course not a man-of-war—that would have been looked upon as an awful breach of international law. As one of the colliers had meanwhile been emptied, she was sent to Diego Suarez, and in her went the staff officer in charge of supplies, Commander W——, with instructions to send us the remaining colliers which were waiting there, and to despatch a telegram to Admiral Fölkersam. The latter contained the order: "On receipt of this rejoin my flag."

I do not know if the Admiral discussed with anyone the modifications rendered necessary in our plan of operations by the disappearance of the Port Arthur Squadron. Nor do I know if anyone had been initiated in such a plan. All the same, certain remarks of his, the sense of certain orders issued by him, certain information which the members of the staff did not consider it necessary to keep secret, showed pretty clearly the general trend of the decisions he had come to: immediate resumption of our voyage, so as not to leave the Japanese any time to replace guns damaged by erosion, to overhaul engines and boilers, to make good defects generally, to rest and refresh themselves after a severe campaign of eleven months; a "forced march" eastwards with all his best ships, stopping nowhere, leaving behind any damaged or otherwise hopeless units, so as to reach the Sea of Japan with a force, not, perhaps, very large in numbers, but consisting of picked and quite intact ships, having as their objective—"through to Vladivostok first," and from there to "threaten the enemy's lines of communications."

As I have repeatedly promised, I will be quite candid. In our detachment which went round the Cape, and which was under the immediate command of Admiral Rojestvensky, under the influence of his iron will, the general feeling was good and hopeful. The success of the enterprise was not considered a matter of pure chance, nor were intoxicating ideas of a possible brilliant victory allowed to prevail; but there was a firm, almost cold-blooded determination to follow him unhesitatingly wherever he might lead us—even to certain destruction. On that score there was no difference of opinion. But as regarded both the expediency and the practicability of the plan itself, there were three divergent views. There were some who entirely shared the Admiral's views; others still believed in the possibility of purchasing Argentine or Chilian ships, or of our being joined by the Black Sea Fleet: these considered it to be

better for us to wait until we had amassed a force strong enough for the decisive battle with the entire Japanese Fleet. The third party declared quite openly that now that the First Squadron—which at the outset had been considered (officially, that is) as superior to the Japanese Fleet—had been annihilated, the Japanese would only be given an opportunity for gathering cheap laurels, if the Second Squadron, weaker than the First, were also to be exposed to the blows of the victorious enemy; that we ought now to turn back, since the whole idea of breaking through to Vladivostok was mainly based on chance or good luck. But the latter had been on the side of the Japanese throughout the war.

So far as I was personally concerned the Admiral's plan appeared to me extremely tempting, on account of its very audacity. Why not risk something for once in a way? (I had long ago got sick and tired of Alexeieff's maxim: to be careful and to risk nothing.) I had no belief left in the Argentines and Chilians, after the news we had received; and as to the Black Sea Fleet, I did not count on it, as I was to a certain extent familiar with our diplomatic methods. On the other hand, to declare ourselves to be incompetent, to turn back and run the risk of being branded as cowards—these ideas never entered my head. If, however (and I mean to be ruthlessly candid about myself), at that time the authorities at St. Petersburg had grasped how utterly hopeless—not to say criminal—our adventure was, and if they had sent us categorical orders to come back, I should by no means have been angry; on the contrary, knowing full well the preparedness for war of our "armada," I should have said from the bottom of my heart: "The Lord be praised! They have realised the situation whilst there was still time."

I dare not maintain that it was was so, but I feel somehow that the Admiral was, on the whole, of the same opinion. The fact that there was not one individual in the small circle of my brother officers who risked saying: "There is no more hope; to go on means to perish uselessly; we must turn back," was only because there might possibly have been someone amongst us—and even only a single one—who did not agree with this, and who might have looked askance at the speaker, saying to himself: "He seems to be a coward." In these circumstances, could he, upon whom "the whole of Russia was looking with confidence and in firm hope," himself be the one to speak of turning back? In that case not only anyone who chanced to be present at such a conversation—possibly a quite insignificant person—but the whole of Russia could reproach him with not possessing the courage required to face death. No. He could not do this. He could—was even bound to—report truthfully on the entire situation, give an unbiased and candid opinion on the value of his forces and those of his adversary, submit his plans, say what his hopes were, without any concealment. *This he did.* The final decision had, how-

ever, to come from St. Petersburg. Could he entertain the idea that "they" had not understood him or not wished to understand him? That these "armchair strategists" were incapable of grasping the situation, which was judged rightly, not only by himself, the flag officers, captains, and their seconds, but also by the younger officers?

To me and to many others it appeared as if the plan, as decided upon by him, had really been dictated by the hopelessness of the situation. It was the last attempt to snatch at least something out of the clutches of fate. Perish—even to no purpose! This plan reminded one of the desperate cavalry attack delivered by General Marguerite at Sedan. If there be no other way out of it, then let us go at it with the best of what we have.

Do you recollect the scene when the General, severely wounded in the head and sinking into the arms of his aide-de-camp, pointed out to his regiments, with his drawn sword, the way they were to go?

Do you recollect the scene when Admiral Rojestvensky, severely wounded in the head, thrown half dead from the sinking flagship to a destroyer, still found the strength, during a short return to consciousness, to give the positive order: "Follow the squadron. Vladivostok. Course N. 23° E."?

Yes. If those who were no less than he in a position to judge of the situation did not order him to turn back, then there was only one course—forward, even if to certain destruction. And the quicker the better!

Flag-Lieutenant S——, whom I have already mentioned, filled at the same time the position of a kind of private secretary to the Admiral. S—— conducted his most confidential correspondence, was initiated into all secrets, probably quite as much as the chief of the staff himself, and, above all, since it was he who handed the Admiral the deciphered telegrams, and who put the replies, which were sent so frequently, into cipher, he was in a better position than anyone else to judge of the effect which this special correspondence produced upon the commander-in-chief.

As regarded keeping a secret confided to him, S—— was like the grave, and, needless to say, the information not intended for publication which he gave me in strict confidence, as an old messmate and friend, will never be divulged; with the exception, perhaps, of cases where the exposure of a lie may be necessary—of a deliberate lie spread by people who, personally interested in the affair, might be trying to clear themselves, in the belief that all reliable witnesses to the contrary are resting on the bottom of the Sea of Japan. Then it would be quite a different thing. And I trust that S—— himself will in such circumstances forgive my breach of trust.

"Yes," he once said; "you may perhaps guess it, but no one really knows what the Admiral has to go through. Sometimes I bring him a deciphered telegram. He reads it.

He crumples up the paper in his hand. It looks as if he meant to tear it to pieces. But no. He masters himself. He begins to dictate the reply. Often he changes the form, makes improvements, gets furious with me. I hold my tongue. I know that his anger is not directed against me. I am indignant myself. Or he suddenly says, apparently quite calmly: 'Leave me alone now, by and by I will . . . I will write it myself'; and on going out I hear him breaking the pencil he had in his hand, grinding his teeth, and trembling with suppressed rage, calling someone 'Traitor!'"

(To be continued.)

THE MANNER IN WHICH THE INFANTRY ATTACK CAN BEST BE SUPPORTED BY ARTILLERY FIRE,

HAVING REGARD TO THE PRESENT SYSTEM OF ARTILLERY TRAINING AND TO RECENT IMPROVEMENTS IN *MATÉRIEL.*

By Captain A. H. C. KEARSEY, D.S.O., 10th (Prince of Wales's Own Royal) Hussars.

ANALYSIS.

CAN only be profitably discussed after the following points have been made clear:—

1. What *is* the infantry attack?
2. What support has *hitherto* been rendered to attacking infantry by field artillery?
3. What is the *present* system of artillery training?
4. What are the recent improvements in *matériel?*

ASSUMPTIONS.

Let us consider each of these points in turn; but in order to limit the field of enquiry we will, as a general rule restrict our remarks to the infantry and artillery systems and armaments of the British Army, and, ignoring all reference to so-called containing attacks, feints, or demonstrations, deal only with the main or decisive attack over open ground on an entrenched position, defended by troops well trained and armed with the best weapons.

THE INFANTRY ATTACK.

The infantry attack commences by the advance of a firing line (of sufficient strength to draw defenders' fire, and thus to find a target for attacking artillery) to effective rifle range—say 1,400 yards from the position.

Here will begin, probably, what the Germans call the fire-fight, and since it is necessary at this stage to "bring a more effective fire to bear than that delivered by the defence," it seems clear that the attacking artillery must play a part in the fire-fight.

Certain it is that rifles cannot be placed in line in attack more closely than in defence, and, rifle for rifle, the defenders ought

to shoot with greater effect, their riflemen being under cover with supports immediately available, and aiming at known distances at an exposed target. The attacking infantry are at a serious disadvantage in every respect, but a converging fire from attackers' artillery should more than compensate for the disadvantages which the attacking infantry labour under; and when by this means "a more effective fire" is brought to bear, a further advance will become possible. Such advances, continued from time to time as fresh troops arrive to replace casualties, should result in the establishment of strong lines of infantry so near the position that the enemy's entrenchments can be rushed, the garrison expelled, the evacuated position seized, and fresh cover thus obtained, from which the infantry at least can pursue the enemy with their fire, and re-form for further operations, offensive and defensive.[1]

Infantry Formations.

"Infantry Training" goes more into detail as to the method of attacking. It seems that in the initial stages of attack—that is, at "distant" and "long" ranges—the formations as "effective" range is approached will be changed into lines of skirmishers widely extended; and finally, as "decisive" range is reached, the lines of skirmishers will be reinforced until the intervals are filled with as many men as can use their rifles. The maximum density then attained is computed at one rifle per yard.[2]

As regards Frontage, Distances and Pace, it appears that the need of ultimately establishing in front of the enemy a line of rifles at intervals of one yard practically fixes the frontage at 100 yards per company, because there are 93 privates in a company at war strength, and casualties have to be deducted and reserves added. The successive bodies formed by scouts, firing line, and supports would be more than 200 yards distant from each other, and thus each company would cover an area of, say, 400 yards by 100 yards; and behind each group of companies, say at a distance of 300 yards, would follow the local reserve, and thus we require for the battalion in attack an area of, say, 600 yards by 700 yards; but though the frontage must be maintained, the depth is diminished during the advance, because "the troops in rear should be brought closer to the firing line the nearer the moment for the assault approaches."

The last stage of attack would show about 550 rifles in line in single rank on a front of, say, 600 yards, the remainder of the battalion being accounted for as casualties.

As regards Pace, we are reminded that undue rapidity exhausts the men, and thus impairs the accuracy of their fire. "During the earlier stages of the attack the ordinary pace[3] should be maintained." "When the defenders' fire begins to tell seriously," fire must be opened by the attacking infantry,

[1] "C.T.," 120-121.
[2] "I.T.," 132-133.
[3] Say 100 yards a minute.

which, however, should avoid opening fire until either the defenders or their position can be clearly distinguished, when, to render this fire effective, the firing line must be reinforced; and since the reinforced firing line will serve as a target to the defenders at decisive range, its further advance will become a matter of the greatest difficulty.

Subordinate commanders, who alone will possess any control at this stage of the fight, are expected to adopt their own methods of overcoming this obvious difficulty.[1]

From this point the nature of the infantry attack cannot be foreseen. Every company commander is thrown upon his own devices as to the manner in which he or his successor in command will get forward with the 93 riflemen (less casualties) under his control, and speculation beforehand will help him but little, since ground, *morale*, and the enemy's dispositions will make each attack a different problem to solve. Accordingly, this is the point at which enquiry into the nature of the infantry attack of the future must pause, since personal experience often is at variance with theory, and historical narratives are often only prejudiced records of moments or hours of confused action, in which the things ordered may not be done, or if done prove injurious, while impromptu and unauthorised acts have been justified by their successful results.

History.

The first campaign fought with breech-loaders[2] was followed by a remarkable revelation as to the manner in which the Prussian infantry fought.

The next campaign,[3] when the needle gun was opposed by the Chassepot, produced other remarkable disclosures.

After Plevna we learnt what the Turkish infantry did in defence of entrenchments, and deduced therefrom the character of the Russian attack.

In 1899 fresh records were made by the attacking infantry,[4] but against a foe whose Fabian tactics called forth very little of the kind of resolution for which Wellington's infantry was famous in the battles of the Pyrenees.

Later yet, in the Far East, the Russians and the Japanese went far in their encounters to render obsolete all existing theories of the infantry attack, which had been based on musketry experiments and experience of European campaigns between 1866 and 1877.

Indeed, many of the battles in Manchuria read like stories from the Seven Years' War, when the fighting instinct of men armed with muskets and bayonets broke through the ceremonies of linear tactics, and when neither side would yield until 30 per cent. of its strength had been expended.

[1] "I.T.," 134 (1), 136 (3). [2] 1866 [3] 1870. [4] British.

Conclusions.

It seems to need, therefore, the confidence of ignorance or the gift of prophecy to say what is the infantry attack—that is, what kind of combat we are teaching our field artillery to "support."

Let us consider some of the assumed conditions which will prevail in the next European war.

A Hythe pamphlet, dated 5th February, 1907, shows the results of experiments and demonstrations of the power of fire, upon which our training manuals are mainly based.

Peace Experiments with the New Rifle.

To begin with, we learn that 282 officers, tested in judging distance on unfamiliar ground, produced an average percentage of error of:—

23·1 between 200 and 300 yards.
17·7 between 850 and 1,400 yards.
20·5 between 200 and 1,400 yards.

And 658 non-commissioned officers similarly tested are rather below the officers' standard. Errors in range-finding must vitiate all plans based on the shooting of an average infantry unit at known ranges. How often is the effect of rapid fire of modern rifles enlarged upon; is it generally known that after the first minute the number of hits made by a party of Hythe experts will fall from 114 to 89, such is the fatigue of the firers and the difficulties of aiming when the magazine is used? The modern "charge" is to be a run from 200 to 50 yards, firing from the hip, in an extended line, and experiments show that when the enemy is represented by a dummy garrison standing up in the trench, the "charge" of 168 experts firing 1,330 rounds results in making 119 hits. No improvement was made when firing—at a run—from the shoulder. At 1,600 yards a company column, if subjected to 7,137 rounds fired by 706 experts, would be hit 575 times (8 is the percentage of hits to rounds); and so the conclusion is drawn: "A line formation is preferable to that of company column, in consequence of the latter being little less visible, while offering greater depth."

Power of Defence.

Suppose, now, we turn to the defenders, and imagine the effect upon attacking infantry produced in one minute by four men armed with the short rifle, charger loading. The Experimental Staff at Hythe fired 30 rounds in 60 seconds, and obtained a percentage of hits to rounds of 86·7 at 200 yards, kneeling.[1]

Comparison of slow and rapid fire has led to the adoption of a middle course.

[1] Compare this record with the infantry "charge" above mentioned, where percentage of hits to rounds was 9 only.

The highest rate of fire expected from average soldiers is 8 to 10 rounds a minute; but when the "superior accuracy" of slow fire is balanced against loss of material effect through lack of "volume," the conclusion is reached that "bursts of rapid fire" yield the best results, provided always that these bursts are "carefully timed and delivered" at a rate "contingent on the training of the troops"—a rather difficult point for subordinates to settle. It is to be feared that with rifles, as with guns, theory outstrips practice; machinery will go on improving the weapons of precision, but human imperfections remain. Other experiments show that "at short range (400 yards) skill cannot compensate for marked inferiority in volume of fire"; in other words, at this distance 40 men extended to two paces will inflict a loss of 26·2, whereas 56 men extended to six paces will reduce the power of inflicting loss by nearly 50 per cent.

The question of "distances" has been disposed of by peace experiments, and we are now told that "probably the smallest distance giving reasonable immunity from unaimed fire to a skirmisher column at effective range is 300 yards, that at distances under 1,000 yards serious loss from unaimed fire will be felt by units 200 yards behind the firing line, and in an advance by successive movements of firing line and supports[1] the loss will be far less than in a simultaneous advance. The proportion is 4 to 1, according to peace experiments, and probably this proportion will hold good, since in war the fire of artillery and covering units will compensate for the temporary cessation of fire during the "simultaneous" advance; and it is likewise assumed that the advance would be so regulated as to avoid any conventional or machine-like movements which may assist those directing hostile fire.

The simultaneous advance reduces time by half, but increases the loss as 4 to 1, when infantry are acting alone.

Such are the factors of the problem which has been waiting solution for forty years past: how to attack an enemy armed with modern rifles without incurring excessive loss.

Form of Attack.

With regard to the form of attack, twenty years ago the rival schools of Lewal and Meckel contested the principle of extension and the principle of depth, on which depend the question of frontal attack *versus* enveloping attack.

Meckel.

Partisans of the condensed order declared that "the extended line will be without any resisting force, and whilst it seeks to envelop the enemy with his deep formation, will pierce its centre," and of course Austerlitz and Wagram were cited as cases in point.

[1] A column of skirmishers.

But the French school of tacticians replied as follows: "To give value to this argument it would be necessary to show that the arms in use then were employed at present. Then there was no power of resistance unless a force was grouped in masses. As soon as it was dispersed, as in line, the fire lost almost all its efficacy, and could be faced without suffering heavy losses. . . . . To penetrate a line is a seductive theoretical idea, and formerly it was possible; to-day it is no longer so. The advantage is now altogether with the enveloping attack, and for this reason: it is important to advance on an extended front."

Meckel's adherents retorted with arguments to the effect that increased frontage is not necessary; that the number of men to the yard in the time of Napoleon should be regarded as the minimum at the present day; that deep formations are still necessary, owing to the waste of men in the fighting line.

A summary of the controversy is extant in a pamphlet issued by the War Office, and the compiler sagely remarks[1] that it is impossible to adopt one principle exclusively without sacrificing the other. Our drill books of the period show how adherents of both systems were pacified, and traces of the old leaven are found in our training manuals even to-day.

We hope, as we have ever hoped, to avail ourselves of the advantages of all systems, while avoiding all consequences of their defects. We seek for preponderance of fire with Lewal, but we desire to keep ample reserves with Meckel. We adopt the principle of frontal extension with a view to "envelop," and yet we desire to guard against a premature development of the attack before the enemy's vulnerable points have been discovered.

Above and beyond all we attempt to emulate and even excel the tactics of national armies, though our army system restricts us to a small force, such as a French or German commander would treat as a mere detachment. (*See* Note A).

Let us now see what history has to say with regard to the tactical employment of field artillery.

Artillery in 18th Century.

Before the Seven Years' War, at such battles as those of Mollwitz,[2] Dettingen,[3] Fontenoy,[4] the infantry battalion carried its own artillery about with it, as machine guns are carried to-day.

The guns of the period were probably useful in frightening the horses of the enemy's cavalry, and breaking the rigid lines of his infantry; but their range was so short that they were necessarily posted in front of the battalion.

Frederick the Great improved the effect of artillery by assembling his guns in masses called batteries. One such battery at Rossbach, posted on the Janus Hill, contributed

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[1] 1884. [2] 1741. [3] 1743. [4] 1745.

largely to the Prussian victory in 1757, which was won by 4,000 cavalry, 18 guns, and 7 battalions of infantry, who by a tactical stroke defeated 50,000 French and Austrians.

These masses of guns were called the "Reserve" artillery, and at Kunersdorf 3 batteries were employed to bring a cross fire to bear on the Russian flank, while the Prussian Grenadiers stormed the Russian batteries.

Napoleon developed the idea, and, like Frederick, increased his artillery to compensate for the falling off in numbers and quality of his infantry. As Clausewitz observed, "a battery of eight 6-pounders does not occupy one-third of the front of a battalion of infantry, is worked by one-eighth of the number of men composing a battalion, and does certainly twice, if not three times, as much execution with its fire"; but the battery was not mobile like infantry, nor could it, like infantry, be used in any sort of ground.

The guns had, therefore, to be kept together until the progress of the combat showed the "decisive point," and there the guns would be massed, to batter the enemy's line, preparatory to the infantry assault.

In those days infantry could deploy at 100 or 200 paces from the enemy.

Before Dresden, Napoleon had 1,300 guns at his disposal. After Lützen and Bautzen we hear him say "it is the artillery of my Guard which decides these battles, because I have it always at hand—I can bring it to bear wherever it becomes necessary." Again he says[1]: "Great battles are won by artillery," but we must remember that this was after his Russian campaign, when his newly-formed regiments were of a different value from the army of 1805-06, and "the more inferior the quality of a body of troops, the more artillery it requires"; and so, to certain corps, Napoleon allotted one-third of the guns he deemed necessary for the support of other corps. The normal use of artillery by Napoleon was seen at Friedland,[2] when Senarmont collected the entire artillery of Victor's corps,[3] which had been kept in reserve with the Guards, and massed them 300 or 400 paces in front of the Russian infantry, and by a storm of case shot produced decisive effects. Napoleon had previously ordered that, when his right wing[4] advanced to the attack, "all the cannon along the whole line will redouble their fire in the given direction, so as to support the attack of that wing."[5]

When we recall the pigmy proportions of field guns a century ago, as compared with the modern 18-pounder Q.F. gun, it is difficult to credit the historians' reports of the effect of their fire; but, no doubt, with guns as with muskets, the short ranges more than compensated for the small calibre and slow service. The most effective fire was grape at 400 to 600 yards; the fire of musketry was limited to 150 to 200 yards, and

[1] In 1813. [2] 1806-07. [3] 36 guns. [4] Marshal Ney [5] Yorck, I., 368.

one-third to one-half of the infantry were kept ready to attack with the bayonet.

Napoleon's practice, of course, taught his enemies, and when he noticed the artillery tactics of the Allies at Leipzig, he remarked: "At last they have learnt something."

Blucher had become a convert to the Napoleonic method of using Reserve artillery, and before the War of Liberation opened in 1813, he declared: "We shall need plenty of guns to do this business."

To the field of Waterloo Napoleon brought 246 guns, and among the 6-pounders and 12-pounders were 6-inch and 24-pounder howitzers.

Prussian Artillery at Sadowa, 1866.

The reserve artillery tradition led the Prussians, after 50 years of peace, to allot their artillery in the next campaign sparingly to divisions, and collect the remainder to march in rear as reserve artillery, but at such a distance from the infantry that the combat was finished before the reserve artillery arrived on the scene. Kraft sums up the lesson of the war of 1866 in his "Letters on Artillery," to the effect that the Prussian guns on almost every occasion came up far too late and in insufficient numbers, so that in all engagements the Prussian infantry was exposed to the fire of the Austrian guns, which the skirmishers had to silence with their breech-loaders and explosive bullets.

The Prussians in 1866 possessed rifled breech-loading guns, classed as 4-pounders and 6-pounders,[1] but only four battalions were allotted to each division. The "reserve" artillery of each "corps" absorbed seven battalions, and each "army" had a special reserve of sixteen battalions, exclusive of the artillery with the cavalry divisions.

At Königrattz, on the only occasion on which the Prussian guns in action outnumbered the Austrian guns,[2] the range was 1,900 paces, and the result *nil*, for the Prussian gunners were too unskilled in the use of the new weapons to make good practice at such a range.[3]

The verdict of the Prussian official historian of the war, on the combat at Tratenau, may fairly be applied to the campaign as a whole: "The infantry almost fought alone." It must, however, be admitted that the circumstances were peculiar in two respects: (1) The newly-invented breech-loader guns gave the Prussian infantry such an advantage over the Austrians[4] that many infantry leaders regarded the aid of artillery as unnecessary, and pushed forward at such a rate that the infantry soon masked the fire of the guns; (2) All the combats took place in the short space of seven or eight days, so that time did not

[1] Though throwing a somewhat heavier shell than their names implied.
[2] On the hill of Horenowes.
[3] Kraft.
[4] Armed with the M.L. rifle.

admit of any changes of organization or tactical methods, such as usually occur after the first experiences in a new campaign. The artillery complained that the infantry were in too great a hurry to finish the fight. The infantry were secretly pleased to be able to dispense with the scientific arm. There was no co-operation. In short, the Sadowa Campaign of 1866 is chiefly remarkable to the student of tactics as showing how the canker of a long peace had completely obliterated the teachings of Frederick and Napoleon, in regard to the use of artillery in attack.

Prussian Artillery in 1870.

The experiences of 1866 were immediately utilized by the Prussians, and in such a fashion that, after Sedan, we are told Louis Napoleon (himself an artillerist) declared that "he felt himself personally conquered by the Prussian Artillery." He had invented a new gun, the "Napoleon," a species of compromise between the ordinary field gun and a howitzer, which fired a 12-pound common shell instead of round shot; but upon the whole the French Artillery in the war of 1870 showed itself distinctly inferior; not only in material, but also from a tactical point of view, and hence the French Emperor's feelings.[1]

The French guns in 1870 were the old bronze S. B. guns converted on the Lahitte system, which had served the French at Magenta in 1859, but were very far inferior to the Prussian artillery, which, in 1870, were all rifled B. L. guns.

The situation for the Prussians had entirely changed in four years. In 1866 they had to contend against an inferior rifle, in 1870 against an inferior field gun. In 1866 their infantry may be said to have saved their guns, in 1870 it was the function of the Prussian artillery to save their infantry, who were opposed by a superior rifle.[2] The record of the Prussian artillery in 1870 is one of which Kraft and other gunners are justly proud. In every battle the guns were in the forefront of the fight.

Weissenburg.

At Weissenburg,[3] a Bavarian battery opened fire on the French position, at almost the same moment as the light infantry of the 10th Battalion; and at the end, 66 guns supported the decisive attack, firing at close ranges exposed to the enemy's infantry fire, blowing in the gates of the town and bombarding the Chateau Geissberg, "after the efforts of the infantry to take it by assault, without waiting for the guns, had completely failed,"[4] and the Prussian artillery also took part in the pursuit.

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[1] Verdy, p. 141. [2] The Chassepot. [3] 4th August. [4] Kraft, 31.

Worth.

At Wörth, the tendency to employ artillery early in the action was again characteristic of the battle. After 9.30 a.m. no fewer than 108 guns were in action, before the infantry had even deployed, batteries came into action, in the thick of the infantry fight, and stopped the French counter-attack with ease; at certain points the guns were seen even in front of the line of skirmishers.

Spicheren or Saarbrücken.

At Spicheren,[1] the Prussian artillery opened the action, and drove away the French guns, which had commanded the ground by which the Prussian artillery had to advance; the batteries climbed the Rotheberg by a very steep mountain road, which had been regarded as impracticable for guns, and fought amid the infantry at a cost of half their detachments. 66 guns came into action, battery by battery as they arrived, one even coming by rail from Königsberg to take part in the fight.

Colombey.

At Colombey,[2] the advanced guards commenced the action by sending forward at a trot, far in advance of the infantry, all the available guns under an escort of cavalry. The action had opened at 4.30 p.m. when some batteries were in bivouac, but they were at once pushed forward, some with escort, some without, so that by 7 p.m., a line of 90 guns were shelling the French, and so continued until dark, 24 guns crossing the Colombey stream to unlimber in the line of skirmishers.

Vionville, or Mars-La-Tours, or Rezonville.

At Vionville,[3] last of the great cavalry battles in Europe, the reconnaissance was prepared by batteries of Horse Artillery,[4] of the 5th and 6th Cavalry Divisions, shelling the French bivouacs. At 11.30 a.m., a line of 126 guns crowned the heights from Tronville to the wood of Vionville, and some of these batteries had, until their own infantry arrived, to defend themselves against the attack of French infantry. By 3 p.m. 150 guns were in action, and by 4 p.m., 210 guns had opened fire. Thus Bazaine's retreat was stopped, and his army held fast at Metz, while the 2nd German army hurried forward to engage the enemy in a decisive action.

Gravelotte or St. Privat.

At Gravelotte,[5] the great battle was begun by the artillery of the 9th Corps, by noon 54 guns were in action in advance of their infantry. One battery was quite destroyed and the others were silenced in two hours, but, meanwhile, other batteries had arrived, and after 1 p.m. there were 138 guns in action, though

[1] 6th August. [2] 14th August. [3] 16th August. [4] Thirty guns. [5] 18th August.

the infantry had not yet been engaged. At 3 p.m. 88 guns were emplaced in a semi-circle round St. Marie-aux-Cohenes, and so covered the attack of the infantry, who seized the village. At 5 p.m. we find the Prussian artillery acting in three great groups, (a) on the right wing at Gravelotte were 27 batteries, who shelled the Point du Jour position; (b) in the centre 13 batteries shelled Amanvillers; (c) on the left wing, 30 batteries shelled St. Privat. "Only such batteries had been left in reserve as could find no room." Thus 420 guns were in action before the infantry came forward to the decisive attack. But the St. Privat position apparently was not much injured by the preliminary bombardments since the infantry assault failed, but as soon as it was seen that the infantry were checked in a position which masked the fire of the guns, the latter hastened forward to close range, and overwhelmed the position with shells, until its capture by infantry became possible. The gunners fought shoulder to shoulder with the infantry, and repulsed the enemy's counter attacks.

Beaumont.

At Beaumont,[1] the action was begun by 48 guns, and within an hour 180 guns were in action, though the difficulty of movement was considerable, and much temporary disorganization had been produced by the sudden change in the line of operations, caused by MacMahon's flank march round the right wing of the Prussian army.[2]

Sedan.

Sedan, the crowning catastrophe of the 1870 campaign, was essentially an artillery action. Until 7 a.m. fog prevented the employment of the Prussian guns. But at 8.30, from the east of the Givonne Valley, 96 guns had opened fire. The Guard Artillery 90 guns prolonged the line northwards. Across the Givonne valley in rear of the French, and intercepting their communication with Paris, 84 guns were emplaced by the 11th Corps, and the 5th Corps prolonged to the north with 60 guns.

Similar dispositions were made to the south of Sedan, until finally a complete circle of artillery, formed by 540 guns distributed in five groups, concentrated their fire on the same target; and the only "reserve" artillery was that[3] for which no room could be found. Since 1870, the tactics of artillery in all armies acting on the offensive have been modelled on the Prussian system, namely, to bring the guns rapidly into action,

[1] 30th August.

[2] This daring attempt to relieve Bazaine caused the German staff to wheel to the right 250,000 men (then facing west) on a front of 78 miles, so as to face north, though the forest of Argonne, with its difficult hill roads, formed a great obstacle.

[3] One-fifth of the guns present.

to replace Reserve artillery by Corps artillery, and allot a larger number of guns to Divisions, to march the guns at the head of the column, and to increase the mobility of field batteries. In pursuance of this ideal Buller's force[1] at Colenso was accompanied by 30 field guns, besides the 14 naval 12-pounders and two 4·7 guns; but when one considers that the front of operations extended over seven miles, it is evident that some modification was necessary in the tactics adopted by modern armies in western Europe. The offensive as conducted by the Germans always postulates numerical superiority. Buller had less than two men to the yard with which to attack an entrenched position held by Mauser rifles. Colonel Long's artillery tactics were those of the Germans in 1870, but he had only two batteries,[2] which "whirled forwards, outstripped the infantry brigades upon their flanks, left the slow-moving naval guns with their ox teams behind them, and unlimbered within 700 yards of the enemy's trenches."[3] Colonel Long hoped to turn the tide of battle in the approved German fashion, but instead, a "blizzard of lead" from Mausers and Automatic Q.F. guns destroyed the gun detachments, and all attempts to withdraw the guns caused fresh losses. In 1866, the defender's guns had been silenced by attacking infantry; in 1899, we see the attacker's guns overpowered by defending infantry; in both cases the artillery seem to have under-estimated the effect of a new infantry weapon.

But even the experiences of the Boer war are becoming rapidly antiquated in view of recent changes in material involving a new system of training artillery units.

Our present system of artillery training is based on the new divisional organisation, which makes the artillery brigade the tactical unit, which combines the whole of the artillery of a division into a single command, with a headquarters on a scale of an infantry or cavalry brigade, and which abolishes the reserve of guns formerly retained as "Corps" artillery at the disposal of the commander of a group of divisions. To apply the various systems of artillery fire correctly demands a high standard of tactical training, and this is possessed by the brigade commander, who is responsible for the fire tactics of his batteries, subject only to instructions received from artillery headquarters.[4]

The whole of the artillery in a division is controlled by a distinct headquarters staff under a Brigadier General, a staff which corresponds to the staff of an infantry or cavalry brigade. "Headquarters" brigades and batteries (except heavy battery) all have signalling equipment for inter-communication with G.O.C. division and his general and administrative staffs in the field. The artillery temporarily allotted to the advanced or flank guards for a particular operation will be under the immediate control of the O.C. detachment, who, according to his instructions[5] may, or may not, in choosing a position for his

[1] 16,000 infantry. [2] 15-pounders. [3] Conan Doyle.
[4] F.A.T.," pp. 184 and 186. [5] "C.T.," III., pp. 7 and 8.

guns, keep in view the subsequent action of the artillery of the main body on its arrival. Evidently we are not to assume that the whole of the divisional artillery[1] will be available to support the infantry advance on every occasion.

The G.O.C. before committing the troops to action will personally reconnoitre the enemy's position, and artillery officers will take part in this reconnaisance, with the special object of noting good positions for their guns.[2] The G.O.C. will afterwards frame his plan of attack, that is, determine the objective, decide on the mode of attack, and distribute his troops. This will involve the concentration of the bulk of his force opposite the decisive point, because "as a rule, superiority of fire cannot be attained by the assailant unless he is numerically superior at the decisive point."[3] In the case of artillery, of course, this rule would only apply in the sense that the guns would generally select as targets the objectives allotted to the infantry; the efforts to produce oblique and enfilade fire on these objectives might, however, compel the artillery to move out to the flanks, instead of taking up a position in rear of the infantry, opposite the decisive point. The artillery will, however, in any case form up in preparatory positions (under the protection of the advanced guard), ready to come into action as soon as a target is presented to the gunners, and this target is assumed to be "such of the enemy's troops or guns as are, for time being, of the greatest tactical importance";[4] but, nevertheless, "a change of target entails some loss of time and effect," and so the objective for artillery must be very carefully chosen at the outset.

The first task of the infantry is to find a target for the artillery,[5] by drawing fire from defenders' guns and entrenchments, which will probably command the lines of approach.

The enemy's guns will probably be dispersed so as to bring a cross fire to bear on every possible line of advance,[6] and his heavy guns will probably force deployment at a great distance. The enemy's heavy guns will, therefore, probably become the first objective of the attacking artillery, provided, of course, that their positions can be located and the effects of fire be observed. Some difficulty will be experienced, no doubt, in moving heavy guns in attack. The use of heavy guns was made easy to the Boers, because the young Boers were past-masters in the art of driving cattle. Heavy guns must silence the enemy's guns at distant ranges, enfilade points, which other guns can only reach with frontal fire, and destroy villages and houses with their heavy projectiles; it should rarely come nearer the position than 4,000 yards.[7]

Howitzers, by means of indirect and high angle fire, search the interior of trenches and reverse slopes of positions. Field

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[1] 70 guns. [2] "C.T.," 112. [3] "C.T.," 114. [4] "C.T.," 118.
[5] "C.T.," 120. [6] "C.T.," 127. [7] "C.T.," 118.

guns silence hostile guns and shell the points selected for assault. Attacking artillery should not be exposed to enemy's rifle fire, but, subject to this rule, artillery in the final stage of an attack may be advanced to within the decisive ranges,[1] and continue its fire upon, and over, the position held by the enemy during the infantry assault; and with this object in view, field guns must not sacrifice mobility to shell power. All guns are required to support the final assault.

The average infantry soldier's view of the manner in which the artillery should co-operate in the attack has been concisely set forth by a writer in the ROYAL UNITED SERVICE INSTITUTION JOURNAL (page 107, Jan., 1907): "We expect that our artillery shall not leave us to be exposed alone to the attacks of the enemy's cavalry and infantry, or his artillery and infantry . . . we infantry can, and will, attack any subject as long as we are supported by the sister arm of the service. When in the attack our advance is suddenly checked by any hostile troops, whose resistance we cannot overcome, it is from our artillery fire, switched on to that hostile force that we expect the relief necessary to enable us to continue our attack . . . . in battle, we of the infantry feel greatest confidence when we know that our artillery leaders have their eyes glued on our infantry efforts, so that we may feel instinctively that whilst we are attacking, they are watching for all and every opportunity to intervene in our favour as fast as these opportunities occur . . . . we want the gunners to be in our battle, and at our elbows, figuratively speaking."

This view of the matter shows that to-day, as in former times, the infantry want the evidence of their senses as to the support being rendered by their artillery, the moral effect produced on infantry by the actual presence of the guns still counts for something, as in the days when the noise and the smoke of artillery in the battle line was felt to be as inspiriting as music to the infantry engaged. But, of course, this is not the scientific view, and infantry will need much instructing as to the difference between moral and material effects, before they acquiesce in the concealment of guns and the advantages of indirect fire, which is now advocated so strongly by Sir Ian Hamilton, who is still personally satisfied that indirect fire is the fire of the future, and that in a general sense "the methods of 1904 are already to a great extent obsolete." His extreme view is not shared by all gunners, for example Major Cadell, R.F.A., in the R.U.S.I. JOURNAL[2] claims that, other things being equal, the best position for Q.F. shielded guns is where the best view from the guns can be obtained, and that this would be at, or very near, the crest of a hill, rise, or position; that the skyline is a relative expression, which does not necessarily mean a

[1] 2,000 yards and under.

[2] December, 1906.

"Field Artillery Training" (Chapter VIII.), summarizes the functions of the higher commanders of guns in attack.

position easy for the enemy to range on; and that the shields on the new guns "which make them at present almost invulnerable at fighting ranges," justify the occupation of positions, which formerly might have involved undue loss of personnel. Indeed, Sir Ian Hamilton elsewhere says, "there should be no hesitation in coming out into the open, to fire direct, with the new shielded guns." He would be "glad to see Battery Commanders expose their guns more freely to the risk of capture, by coming right up into the infantry firing line at the decisive moment." Apparently Sir Ian Hamilton's previous remarks are to be taken as meaning only that "the employment of indirect fire constitutes the most difficult part of artillery training, and that once the detachments have thoroughly mastered this method, they can always be relied upon to fire direct when required." He concludes by reminding us that the enemy may make a decisive counter-attack, and that the concealment of our guns in attack so that they cannot be located by the enemy "may fill the hostile commander with perplexed anxiety. Indeed, until he can make out more or less where the guns are firing from, he hardly dare commit himself in a decided advance, lest he be struck in the flank by an unknown number of batteries." (*See* Note C).

Manchuria provided several examples of this special moral effect of direct fire.

The object lesson of Colenso has taught us that the methods of the Germans in 1870 are obsolete.

When should attacking artillery begin to open fire? On the Tugela, General Buller, on Dec. 15th, 1899, ordered each commander with his troops to occupy a specified place out of fire, and await the result of a general bombardment before leaving it. His intention was to ascertain by practice, the accurate range of all the points from which opposition could be offered to our advance.[1]

But General Oku's maxim was, "No cannonade until the infantry begins to take up its position for attack," and Sir Ian Hamilton adds "it is mere waste of ammunition, and an encouragement to an entrenched enemy, to fire at him before the commencement of the advance with anything but high angle howitzer fire, and even with howitzers it is no good firing until the imminence of the attack has forced the enemy to man his trenches. Field guns should not open fire until the attacking infantry has got so close to the position that the garrisons of the trenches must hold their heads up to aim and shoot." Evidently the soundness of this view depends on the nature of the trenches. Such trenches as our engineers make at Ewshott are so well provided with head and overhead cover, that the garrison could shoot in perfect security, through a narrow loophole that commands the line of advance. The rifle bullets of attacking infantry could enter the loopholes only by chance,

[1] "Evidence," p. 17.

and it is doubtful whether any projectile but high explosives could make any serious impression on the defenders.

In this connection Sir Ian Hamilton remarks, "The heavy artillery must not allow itself to be weighed down by its name; at present it has a tendency to display siege or garrison characteristics; next year it must endeavour to throw itself more unrestrainedly into the spirit and feeling of the field army." The principles and precepts of training manuals and text books, and the theories of experts based on personal experiences, are all very useful for purposes of discussion; but, after all, every battle is unique, situation never repeats itself in every detail, and all that can be expected is that the soldier, who has pondered over the manifold difficulties that beset every attempt to reduce offensive tactics to a system will, when the pinch comes, act with more chances in his favour than one who, like the novice in the hunting field, fears nothing because he knows nothing. So, the manner in which the infantry attack can best be supported by artillery fire in any given circumstances, will be deduced by the officer in command from a consideration of:—

1. The respective forces engaged, their equipment, numbers and moral.
2. The nature of the position to be attacked.
3. The topography of the lines of approach to the position.
4. The general plan of attack whether frontal or enveloping.
5. The probable duration of the fight.
6. The strategical situation.

In studying such modern battles as Königgratz, Wörth, Spicheren, Gravelotte, Sedan,[1] we find that every corps and every division had its own special encounter, which differed in many respects from every other encounter on the same day and on the same battlefield.

One was engaged in wood-fighting, another was disputing the passage of a river, another was absorbed in the capture of a village; another division was scaling heights, and in every case the divisional artillery had to adapt itself to the situation, either by silencing the enemy's guns, or destroyng cover, or dispersing a mass of cavalry threatening to charge, or demoralising the defender's firing line, or checking the advance of the enemy's reserves. And so it will be again.

It is impossible to ordain that a battle shall be fought on certain lines, in order that our peace practices may be made available. The enemy may impose his will upon us; he may even, at one point or more, compel us to adopt a defensive role temporarily. Only one thing we can ensure, let us hope, and that is, the impossibility of having recorded of us what history

[1] Of which we have the fullest and most authentic accounts.

tells of the Prussians in 1866, namely, that "The infantry fought almost alone." As an illustration of the difference between practice and precept, it would be interesting to compare the minute instructions, the counsels of perfection, given in our Training Manuals, with the last offensive battle of which we have a trustworthy account, that is, the battle of the Yalu as described by our general staff,[1] which states that before the war "The artillery was trained to open an action and to work with the battalion of three batteries[2] as a unit wherever ground admitted. Isolated action on the part of batteries was regarded with disfavour, and only to be employed in hilly or broken country where space would be limited. Great stress was laid upon the importance of concealing guns from view and fire, and earthworks were made whenever possible."

The infantry was taught that the great object of the attack was to obtain superiority of fire, that the aim of every man must be to press forward regardless of loss, and that any wavering or lack of dash would lead to increased casualties and diminish the prospects of success. It was laid down that the deployment would be made under cover of artillery, and the troops pushed as close to the enemy's position, before opening fire, as the nature of the ground admitted. The difficulty of crossing the fire-swept zone by day was recognised, and much time was devoted to practice in night operations. The distinguishing feature of the attack lay in the rapidity with which the men moved from point to point; at the same time the operation was characterised by deliberation, and neither reconnaissance nor entrenching was forgotten.

Battle of the Yalu, 1904.

Let us see how all these precepts and prophecies were fulfilled in the opening battle of the campaign. The Japanese first army[3] had concentrated south of the Yalu river in the vicinity of Wiju. The 12th division was to cross the Yalu and occupy a position to cover the crossing of the 2nd and Guards divisions, and in order to assist the operation the artillery of the 2nd division[4] was detached on the night of April 29th, in order to cross a branch of the Yalu and take up a position on Kintei Island[5] ready to open fire at daybreak on April 30th.

The corps artillery was also detached for the same purpose; these guns were escorted by one battalion detached from the reserve. Thus 36 guns of the 2nd division and 20 Krupp howitzers[6] formed a mass of artillery, which before daybreak had entrenched on the sandy soil of Kintei Island.

The channel between Wiju and Kintei Island had been bridged on April 26th and 27th, one span of 256 yards of trestle

[1] "Russo-Japanese War," Part I. [2] 36 guns. [3] Kuroki. [4] 36 guns.
[5] Opposite the village of Chukodai.
[6] 4.7 firing a 46-lb. lyddite shell.

and it is doubtful whether any projectile but high explosives could make any serious impression on the defenders.

In this connection Sir Ian Hamilton remarks, "The heavy artillery must not allow itself to be weighed down by its name; at present it has a tendency to display siege or garrison characteristics; next year it must endeavour to throw itself more unrestrainedly into the spirit and feeling of the field army." The principles and precepts of training manuals and text books, and the theories of experts based on personal experiences, are all very useful for purposes of discussion; but, after all, every battle is unique, situation never repeats itself in every detail, and all that can be expected is that the soldier, who has pondered over the manifold difficulties that beset every attempt to reduce offensive tactics to a system will, when the pinch comes, act with more chances in his favour than one who, like the novice in the hunting field, fears nothing because he knows nothing. So, the manner in which the infantry attack can best be supported by artillery fire in any given circumstances, will be deduced by the officer in command from a consideration of:—

1. The respective forces engaged, their equipment, numbers and moral.
2. The nature of the position to be attacked.
3. The topography of the lines of approach to the position.
4. The general plan of attack whether frontal or enveloping.
5. The probable duration of the fight.
6. The strategical situation.

In studying such modern battles as Königgratz, Wörth, Spicheren, Gravelotte, Sedan,[1] we find that every corps and every division had its own special encounter, which differed in many respects from every other encounter on the same day and on the same battlefield.

One was engaged in wood-fighting, another was disputing the passage of a river, another was absorbed in the capture of a village; another division was scaling heights, and in every case the divisional artillery had to adapt itself to the situation, either by silencing the enemy's guns, or destroyng cover, or dispersing a mass of cavalry threatening to charge, or demoralising the defender's firing line, or checking the advance of the enemy's reserves. And so it will be again.

It is impossible to ordain that a battle shall be fought on certain lines, in order that our peace practices may be made available. The enemy may impose his will upon us; he may even, at one point or more, compel us to adopt a defensive role temporarily. Only one thing we can ensure, let us hope, and that is, the impossibility of having recorded of us what history

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bridge took 45 hours to complete, but this bridge was merely constructed as a blind, and a shorter span of 87 yards (completed in 8 hours) was the actual passage for the guns. The Russians fired only shrapnel, and therefore could not destroy the bridges. The guns on Kintei Island—so well hidden that not a single Russian shell reached them—were ordered to open fire only if a good opportunity arose, or in reply to the enemy's guns, otherwise they were to remain silent, and so conceal their presence on April 30th. But a Russian battery began to shell the Japanese engineers engaged in surveying the main stream in boats opposite Chukodai, and the Japanese guns were compelled to put the battery out of action, and so protect the reconnoitring party. By noon on April 30th, the 12th division had got into position, and then arrangements were made to move the 2nd division artillery from Kintei Island. They were got across the main stream[1] at night on pontoon ferries[2]; but such was the difficulty of working in the dark, that at daybreak[3] only three batteries and the infantry escort had crossed. These at once entrenched where they were able to support the attack of their own division, which in the meantime had moved from Shasando at 8 p.m., and reached Oseki village at 10.30 p.m., moving forward again at 2.30 a.m., and crossing the bridge to Tiger Hill, after which, Chukodai Island was reached by fording one of the channels of the Ai. By daybreak the 2nd division was entrenched in the open, within 2,000 yards of the Russian position, and its batteries on arrival were posted on its left, immediately north of Chukodai village.[4]

At 6 a.m. on May 1st the fog dispersed and the Japanese batteries opened fire, and succeeded in drawing the fire of a Russian battery, which was silenced in a few minutes, and then the whole of the guns turned their fire upon the Russian shelter trenches. At 7 a.m. Kuroki ordered a simultaneous advance of his three divisions.

During the infantry advance, the Japanese divisional artillery ceaselessly shelled the Russian infantry position, while the howitzers, using indirect fire, searched the ground in rear of it. While crossing the river, the 2nd division suffered great loss, especially its left brigade, which, therefore, hung back until the right brigade[5] had pushed on, and forced the Russians from their trenches; and during the retirement of these Russians to a second position on the hills in rear, they were exposed to the fire of the Japanese guns.

Meanwhile, the left brigade had made progress, and threatened to envelop the other part of the Russian force, which the division had engaged as its objective.

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[1] 500 yards wide.

[2] Of which twenty-one were constructed behind Genkado and floated down to Kintei.

[3] 1st May.

[4] *See* Note D.

[5] Six battalions.

The Russians covered their retirement by local counter-attacks with the bayonet, but the Japanese skirmishers giving way, cleared the front of their local reserves, whose fire repulsed the counter-attacks.

On the right of the 2nd division was the Guards division, and the inner flanks of these two divisions broke through the Russian front between Yaokon and Makon, where a Russian battery fearing capture had to retreat.

This battery had no safe line of retreat, and being exposed to rifle fire on every route it attempted to take, and having outstripped its escort,[1] the battery surrendered to a Guards regiment. At 9 a.m. the 2nd division was concentrating with the general reserve near Chuliencheng, but only two of its batteries had crossed the river;[2] the other divisional guns were still in position at the southern point of the Island of Chukodai.

The general situation now was:—The Japanese had captured the Russian first position at 7 a.m., but allowed some hours to elapse, during which the Russians reorganised.

The cause of delay is not clear, Kuroki is said to have feared to attempt a fresh operation without giving food and rest to the troops. It is certain that time was required for the artillery to move forward from their original positions, which now were too far distant from the enemy's second position to afford support to an infantry attack upon it. Another reason given is that the 12th division needed time to develop a turning movement. About 11.30 a.m., Kuroki ordered the 2nd division to move towards Antung, covered by a cavalry regiment; but at noon the G.O.C. 2nd division appeared at Kuroki's quarters to say, that to proceed to Antung would involve heavy loss, as a Russian force, in position west of the Hantuhotu stream, commanded the one practicable road, and that a frontal attack without the aid of artillery[3] would be costly. Thereupon Kuroki sanctioned a suspension of the operation until further orders. Apparently the plan was afterwards abandoned.

About 2 p.m. pursuit was ordered, in which all three divisions took part, in the course of which it is said that one regiment[4] of the 2nd division[5] was ordered by the G.O.C. Guard division to attack in front, while a Guard regiment turned the right of a Russian detachment then retreating; but otherwise, the doings of the 2nd division after 11 a.m. are not recorded. The other two divisions of Kuroki's force on the Yalu have each their own history of the day's operations; but very little detail is available for forming general conclusions as to the manner in which the infantry attack of to-day can best be supported by artillery fire, and the exact situation of May 1st, 1904, will never recur.

[1] One company from the local reserve.
[2] Three authorities dispute whether by ford, boats or bridges.
[3] *See* Note E.
[4] Three battalions.
[5] At 4 p.m.

We may note that if Kuroki's force had been organised like our own "Army," each G.O.C. division would have had howitzers and heavy guns at his disposal; but on the other hand Kuroki, himself, would have been unable to direct artillery fire, without interfering with the arrangements of his divisional generals. But the chief point of difference between artillery in 1904 and 1908 is in the re-arming of the batteries with the barrel-recoiling Q.F. shielded gun and its effect upon the supply of ammunition.

The indiscriminate use of the new guns would quickly deplete the ammunition columns, and our text-book, therefore, prescribes that "rapid fire" should only be opened when the infantry are in great difficulties; and as a corollary, the infantry must utilise these brief periods of intense fire to make progress in its attack. And so we return to the point where this Essay started, namely, that mutual understanding between artillery and infantry is imperatively necessary. Whether the mere facts, that the higher leaders of the arms are theoretically placed in communication by means of signalling, etc., and that all are equally cognisant of the orders issued to all troops for the occasion, is sufficient to ensure the full and instant recognition by the firing batteries and the infantry firing line, of each other's aims during the vicissitudes of a long fight, is the question of vital importance, the question upon which the effective support of infantry by artillery really depends.

Any attempt to lay down rules, or offer detailed advice, as to the manner in which, on every occasion, the infantry attack can best be supported by artillery fire would lead to absurdities, unless we postulate that the commanders of batteries and companies have received a tactical training in common, that gunners fully realise the obstacles to the infantry, and that riflemen understand the powers and limitations of artillery; that in short, a perfect understanding and mutual trust has been established and cemented between the two arms, which are the predominant partners in that dangerous and difficult enterprise—the attack on an entrenched position.

NOTES.

A.—It is conceivable that there may exist some plan, some secret instructions under which a British general would act on taking the field, and which, meanwhile, we conceal from friend as well as foe, by the issue of Training Manuals which will commit their authors to no definite teaching, and which apparently throw upon individual officers all responsibility for the solution of tactical problems. Though the phrase has been dropped out of the latest issue of Combined Training, the spirit survives there of him who could, or would, give no "lead" to officers seeking instruction, further than that they were to use their wits.

B.—The artillery brigade commander's special reconnaissance would embrace such details as the following. (*See* "F.A.T.," p. 174).

The brigade commander should inform each battery of the tactical situation, so that the major commanding battery may choose the proper method of fire, etc.

The O.C. brigade ammunition column will take up a position about one mile in rear of the guns, and send an orderly to the senior captain of the brigade, who distributes the reserve wagons as they come up. The column forms a reserve to the brigade, in *personnel*, horses and material, and temporarily makes good any casualties, besides replenishing the 1st line wagons of the brigade.

The O.C. battery having selected positions for his guns (the captain chooses the position for the 1st line wagons of the battery), and also, for his "observing station," has to decide whether the laying will be indirect or direct, and allots to each section the width of target to be engaged by a pair of guns.

He also appoints two N.C.O's. as look-out men, to watch the movements both of the enemy and of friendly troops, and to discover new objectives. O.C. battery has then to find the elevation, the fuze and the line, by a process called "Ranging," which may be "normal," "rapid" exact or time shrapnel. In this process only two guns (the ranging section) are employed.

O.C. battery has afterwards to determine by what method of fire he will engage the objective allotted to him. He may do so by section fire, gun fire, rapid fire, by searching, or by sweeping.

Rapid fire is produced by each No. 1 firing his gun until the specified number of rounds has been expended.

Gun fire and section fire is ordered by the section commander; but in the former case, each gun fires in turn throughout the battery, whereas in the latter case, each pair of guns works as the fire unit. Section commander takes post in rear of that wagon of his section which is nearest the O.C. battery, and when the target is visible, he observes the fire of his two guns.

Searching fire is the distribution of fire for depth over an area of ground known to be occupied by the enemy, by successive alterations in elevation.

Sweeping fire is used when a battery is ordered to engage a target which is wider than six guns can cover in the ordinary way (say, 150 yards); the lines of fire, or the sections, are made to diverge according to a specific order stating (in degrees or minutes) the amount of sweep required.

To enable a battery to engage an objective, a position must be chosen from which the fire of the guns can be observed, and whence the "ranging officer" with the battery can be communicated with, either by voice, telephone, signalling, or a chain of orderlies. This position is called the observing

station, and the "observing officer" is usually the major commanding the battery.

The captain of the battery is responsible for the replacement of casualties to men, horses and material; section commanders may vary the duties of the gunners—for instance, the layers of the guns should be changed every 30 minutes if firing is continuous. Wounded gunners are sent back to the line of wagons, whence they are removed to the dressing station.

C.—It would seem that infantry have to learn that 20th century warfare may demand that they possess the gift of faith, and commit themselves fearlessly to attack in the full belief that their guns, though to them invisible, may yet be doing all that is required, or at least, the best that is possible in the circumstances.

D.—Three days' supplies for the whole army had been collected for the operation, the base at Rikado closed, and the boats were moved to the south of Antung to await the issue of the battle (movable base).

By feints and manœuvres the Japanese force of three divisions caused the enemy to disperse his troops in defence, so that only 7 battalions and 16 guns were in a position to resist Kuroki's attack, and even this small force was distributed over a front of six miles.

E.—The howitzers could not be brought up for a long time, and there was no suitable position for his divisional guns.

SHOOTING AFTER LONG-DISTANCE MARCHES.

(Communicated by the Austrian School of Musketry to *Streffleurs oesterreichische militärische Zeitschrift*, January, 1910).

Contributed.

IN No. 3 of the "Notes communicated by the School of Musketry," Streffleur, July, 1908, a report was given of a field practice fired by a company of infantry after a march of 28 miles covered in 11 hours.

As a further illustration of the effect of fatigue on the shooting of the men, we give the results of two experiments carried out at Brück in the summer of 1908.

1. *Shooting of the cyclist detachment of No. 4 Company of 84th Regiment before and after a march of 64 miles covered in 8 hours.*

The cyclist detachment of the 84th Regiment, commanded by Captain Peter Leber, volunteered for this experiment, which was carried out on the 12th August.

Fifty men fired, of whom two-thirds were first-class shots, all in their second or third year of service. They were all armed with the '95 carbine. The bicycles were equipped in marching order, and each man carried 100 rounds of ball ammunition.

On the day of the experiment the detachment paraded at the "elementary" range at 6 a.m.

They were formed up as a dense firing line, lying, and fired 10 rounds per man at dummies representing 26 lying figures in the open at a range of 500 paces. These dummies were set up in front of a large screen intended to catch the bullets. The screen measured 35 paces wide by 13 feet high.

Immediately after the shooting the detachment was joined by a second detachment of 35 cyclists, and the whole started on a march to Pressburg, *viâ* Schwadorf, Fischamend, Wildungsmauer, Petronall and Hainburg. At Pressburg the detachment rested for 1 hour and then marched back *viâ* Prellenkirchen.

At a little after 2 p.m. the detachment again arrived at the elementary range at Brück. It had covered a distance of 64 miles in 8 hours, 25 miles being against the wind, which was so strong that the men had repeatedly to dismount and walk.

One man of the detachment had to be left behind, suffering from exhaustion. Immediately on their arrival the 50 men who had fired the first series again fired at the same target under the same conditions as before.

The results are shown in the attached table.

2. *Shooting of the 2nd Section of the 3rd Instructional Company of the School of Musketry before and after a fatiguing field exercise lasting 23 hours, during which 33 miles were covered.*

The section, under the command of Lieutenant Herrlinger of No. 2 Bosnian Regiment of Infantry, consisted of 42 non-commissioned officers, of whom 27 had extended their service; of these 9 were marksmen and 30 first-class shots. All were armed with M '95 rifles.

On the 26th August, after the section had already done the ordinary morning drills, lasting about 5 hours, during which it covered about 8 miles, it was sent to the elementary range at 2 p.m., in marching order, with complete equipment and 120 rounds per man. It then fired the first series under the same conditions as the cyclists.

Immediately afterwards the march to Fischamend (11¼ miles) was commenced. On arrival, at 6 p.m., the section was detailed for outpost duty. The service of sentries and patrols was so arranged that no man got more than 2 hours' uninterrupted sleep before the start, which was fixed for 4 a.m.

At 6.30 a.m. the section reached Ebergassing (7½ miles) and after a march uphill *viâ* Gotzendorf, on a hot day and by a road fully exposed to the sun, it reached Brück (14½ miles) at 1.10 p.m.

Thus the section had covered 33 miles in 23 hours, besides the outpost duty, etc., at Fischamend. The men had had hardly any sleep, and had suffered from the oppressive heat on the return journey.

As soon as the section had reached the elementary range it fired at the same target under the same conditions as before.

The results are shown in the Comparative Table.

CONFERENCE.

The experiment was carried out on the elementary range, with sights corresponding to the distance of the target, on familiar ground, all other service conditions being eliminated, so that the shooting conditions were more favourable than a field practices.

Although the results are not applicable to war conditions or even to field firing, yet they give clear indications of the extent to which the factors of "freshness" and "fatigue" affect the dispersion and density of the bullet cone and the effect produced by the fire of a section.

Although the distance was such as to bring the personal skill of each man into play; although the rifles were of proved

accuracy; yet a section of the Instructional Battalion shot far below the standard prescribed in the Musketry Regulations for section fire.

As might be expected, a higher standard than that laid down for individual fire was attained. Thus according to Musketry Regulations, Table 1 (b), the 100 per cent. zone for individual fire at 500 paces is 51 cm. high, and the "admissible" zone 102 cm. high.

In contrast to this, the section, before the march, when it was fresh, only achieved a 100 per cent. zone of 232 cm., or more than double the "admissible" zone for individual fire. The 50 per cent. vertical zone for the section (64 cm.) is 4 times as high as that given in Musketry Regulations for a single rifle (15 cm.).

This is not a matter for surprise, if it be remembered that all the men were ordered to aim at the lower edge of the target; corrections during the shooting were impossible, since the strikes could not be observed, and since the section lay side by side in a fairly dense skirmishing line, that is, under section fire conditions.

Roughly speaking, the dispersion of bullets of the cyclist detachment was twice as great as that of the instructional section. This is due partly to their comparatively low standard of musketry training, partly to the fact that the carbines had only recently been issued and the men were not familiar with their peculiarities, namely, shorter sighting radius and more violent recoil.

Also the whole experiment was a novelty to the cyclists, while the instructional section carry out similar experiments as part of their daily duty.

The dispersion in depth of the fire of the cyclists was twice as great as that of the fire of the instructional section both before and after the march. This may be ascribed to the very marked influence of familiarity with the weapon, and of marksmanship, especially at short ranges and when the sighting elevation corresponds accurately to the range.

The effect of fatigue on both detachments was manifest in the increased dispersion in depth after the march.

But this increased dispersion is slight in comparison to the severe fatigue undergone, and is less than was anticipated by most of the spectators. For it seemed to the spectators that both detachments were thoroughly tired out, and that they approached the second series under conditions of physical exhaustion. It was manifest that most of the non-commissioned officers of the infantry detachment had reached the limit of their powers.

The large number of shots which missed the screen in the second series is also to be ascribed to fatigue. Thus with the cyclists 60 shots missed the screen before the march and 98 afterwards. But with the School of Musketry Section only 2 shots missed the screen after the march.

As regards the cyclists, we may conclude that a small number of the men were tired out and shot worse after the march than before, but that the majority of the men shot about equally well before and after the march. In general it seemed, with both detachments, that their great fatigue did not greatly affect the careful and deliberate way in which the men shot. And this view is confirmed by an examination of the Table of Results.

The cyclist detachment made 40 hits on the figures before the march and 38 afterwards. But with the instructional section the hits fell from 81 to 62, or a reduction of 19 hits. But the proportionate increase in depth of dispersion shows that these figures alone do not give an idea of the quality of the shooting. For the increase in the dispersion was about the same with the two sections.

Neither does the number of figures struck before and after the march give an accurate idea of the shooting. With the cyclists, the height of 70 per cent. zone increased in the proportion of 10 to 11, while the number of figures struck fell from 19 to 16. With the instructional section, the height of the 70 per cent. zone increased in the proportion of 10 to 12, while the number of figures struck fell only from 21 to 20.

An examination of the diagrams of hits brings many interesting details to light. Thus we find in the 50 per cent. zone, within a breadth of 4 paces, 65 hits; yet not a single figure of the group at this part of the target has been struck, while on the left of the target, out of 9 hits on the screen, 2 figures out of 3 were struck. We notice the same thing as regards the central group and the right-hand group.

We find 48 hits on the screen within the 50 per cent. zone behind the 4th and 5th groups of figures, yet of these 8 figures only 3 are struck.

It need hardly be said that the better distribution, as obtained by the instructional detachment, is due to the better training of the instructional detachment in section fire.

The men did not themselves distribute their fire, each selecting a figure, apparently because it was impossible to observe the bullet-strikes and they were unable to correct their aim.

When the instructional section fired their second series it was evident to the observers that the men were impressed with the necessity for good shooting in order to obtain a good result. Their endeavours not to succumb to fatigue were apparent. The inference was the same as that drawn from the experiments of July, 1908, which have already been described, namely, that a forced march has no marked detrimental effect upon the shooting of a section unless the men are so exhausted as to be indifferent to the result, or as to be physically incapable of holding the rifle straight.

It is true that the shooting lasted only for a few minutes after the march. It is difficult to say whether the men could

have continued for any length of time the effort to overcome their fatigue, as they did in this case.

But in one respect the result confirms the inference already drawn from countless musketry exercises. And that is, that the more each man is impressed with the necessity for good aiming and steady pulling-off, the more thoroughly his will to hit with every shot has been educated; the better the whole training and instruction of the soldier has been adapted to strengthen his will and the mastery of his mind over his body, the more confidently we may expect that even detachments which arrive on the battlefield after severe physical exertion will be capable of well-aimed and effective fire.

General von Rohne, in his "Infantry Fire," gives a good instance of the extent to which the dispersion of the bullets is increased by the combined effect of fatigue and imperfect musketry training.

At the Beverloo Camp, two Belgian companies fired immediately after a march of 18½ miles. At 1,300 metres the dispersion of their bullets was 11 times as great as that obtained by "fair" shots. Nearly half of the shots fired by these two companies would have missed a 7-foot screen at 100 metres. Half of these men were recruits who had never fired before.

In the pamphlet on "Fire Control," issued by the School of Musketry, it is remarked, with reference to the above experiment, that although the excessive dispersion of the bullets was partly due to the long march which the men had executed, yet it must be ascribed principally to their imperfect training.

The records of our own experiments confirm the soundness of this view. These experiments are calculated to confute any arguments tending to deny the importance of training every man of a great modern army to a high degree of individual marksmanship.

The march of great bodies of men to the battlefield, and their deployment from unavoidably deep formation, often entail forced marches, in spite of the best Staff work, and sometimes require almost superhuman efforts of body and mind on the part of individual men.

If every man of a section is convinced that he *will* hit, if he shoots with a firm resolve to hit, then we may hope that the great majority of the men will also have the strength of mind to use their rifles deliberately, in spite of mental and physical fatigue and excitement.

The strong will to hit depends upon the consciousness that "I have hit more difficult targets in peace time, therefore I can hit this one." And it is this knowledge, based on a high degree of personal skill, that the soldier must bring with him to the field.

As General Reisner von Lichtenstein has said, the "resolve to hit" must be made stronger in the minds of as many men as possible than the detrimental effects of long marches and exciting combats.

But in section fire the "will to hit" does not mean that each man is to experiment on his own account by shifting his point of aim to allow for the error of the day and the peculiarities of his rifle, as he is required to do on the range. In the section the "will to hit" is manifested by implicit obedience to the fire commander as regards setting sights, point of aim (always the ground line of the target unless otherwise ordered) taking a careful and correct aim, and pulling off steadily; and also by performing these duties correctly without orders, in case the fire-control wholly or partly breaks down.

Thus we see that the "will to hit" is manifested in different ways in the field. But it must always be based upon a high degree of personal skill in the use of the rifle. And this individual efficiency is now, as it always was, the most reliable foundation to sustain the disciplined fire of a section.

Comparative Table of Results.

Detachment.	Cyclists		Instructional Squad.		
	Before the march	After the march	Before the march	After	
Weather	Bar. 759 + 13 deg. C. Dull.	Bar. 759 + 15 deg. C. Dull.	Bar. 760 + 21 deg. C. Cloudy, Oppressive.	Bar. 759 + 25 deg. C. Cloudy, very hot.	
Sighting elevation	500 paces.				
Aiming Point	Lower edge of figures.				
Rounds fired	500	500	420	420	
Results as recorded on Screen.					
Hits on screen	440	402	420	418	
Percentage of hits	88	80	100	99·5	
Height of 100% zone	—	—	234 cm.	315 cm.[2]	
" " 70% "	213 cm.	235 cm.	100 "	120 "	
" " 50% "	128 "	155 "	64 "	75 "	
Hits on figures — Hits	40	38	81	62	
Hits on figures — Per cent.	8	7·6	19·3	14·7	
Figures — Figures	19	16	21	20	
Figures — Per cent.	73	61·5	75	71·4	
Duration of Fire[1]	4' 30"	3' 30"	3' 40"	5' 30"	
Rate of fire per man per minute	2·2	2·8	2·7	1·8	
Distribution in depth, paces, calculated from above results[3] — 50%	182	222	91	109	173 / 390 / 697 Distribution according to Musketry Regulations.
70%	306	339	143	170	
100%	728[4]	888[4]	337	465[2]	

[1]The men were ordered to fire without unnecessary pauses.
[2]That is, taking the 2 missing shots as erratic.
[3]Calculated on the assumption that the centre of the bullet-sheaf was at 500 paces.
[4]Calculated from the 50% dispersion, multiplied by 4.

NAVAL NOTES.

THE KING.

ADMIRALTY, *June 3rd*, 1910.

In accordance with His Majesty's Order in Council of the 31st May, 1910, His Majesty King George the Fifth has been promoted to the rank of Admiral of the Fleet in His Majesty's Fleet. Dated 7th May, 1910.

ADMIRALTY, *June 3rd*, 1910.

In pursuance of His Majesty's pleasure, the following appointment has been made:—

To be Personal Naval Aide-de-Camp to the King:

Vice-Admiral His Serene Highness Prince Louis Alexander of Battenberg, G.C.B., G.C.V.O., K.C.M.G.

His Majesty, who, on the death of his uncle, the late Duke of Saxe-Coburg and Gotha, in 1900, was appointed Colonel-in-Chief of the Royal Marine Corps, has graciously intimated his intention to remain Colonel-in-Chief of the Corps.

The King has been graciously pleased to present to the Navy the gun-carriage which bore the coffins of both King Edward and Queen Victoria. The presentation was made at Marlborough House on Monday, the 6th inst., His Majesty at the same time conferring decorations and medals on the officers and men who formed the detachment which drew the gun-carriage with the coffin of the late King from the station at Windsor to St. George's Chapel. The detachment, which was drawn from the *Excellent*, at Portsmouth, and consisted of 136 officers and men, under the command of Captain R. G. O. Tupper, A.D.C., R.N., captain in charge of the Gunnery School, arrived from Portsmouth early in the forenoon, and were formed up on the lawn at Marlborough House behind the gun-carriage, which had been already placed there.

As noon struck, King George, wearing the undress uniform of an Admiral of the Fleet, came down the Terrace steps, accompanied by the Queen. After he had inspected the men, the King took up his position at the foot of the Terrace steps by a small table, upon which were arranged the Orders, medals and bars. His Majesty then presented Captain Tupper with the insignia of a Commander of the Victorian Order, after which Commander A. V. Campbell and Lieutenants the Hon. M. R. Best, D. T. Graham-Brown, and A. S. May received in turn from the King's hands the 4th Class of the same Order. Mr. H. H. A. Willmore, gunner, received the 5th Class of the Order, and

then the following three petty officers, S. S. Reed, J. G. Ransom, and B. Savage, received the silver medal of the Order. The remainder of the men received the bronze medal, or, if they already possessed it, the King's bar to attach to it. The bluejackets then formed three sides of a square round the gun-carriage, and the King briefly addressed them, handing the gun-carriage over to their keeping. Captain Tupper thanked the King for the honour conferred upon the Navy, and the proceedings then concluded with the salute, the line was re-formed, and the men marched off to Buckingham Palace, where lunch was prepared for them. After the luncheon interval, the men were drawn up on the lawn facing the Bow Terrace, in order that Queen Alexandra might see them. The Queen Mother saw the men from the windows of the Palace, but did not make any formal review of them. The officer in command, however, was summoned to the Queen's presence, who requested him to convey to the men an expression of Her Majesty's warm appreciation of the services they had rendered. On leaving the garden the detachment marched back to Marlborough House, and left again shortly after 3 o'clock for Portsmouth, taking the gun-carriage with them.

The gun-carriage is a 12-pounder breech-loading one with limber of the type in use by the Royal Horse Artillery at the time of Queen Victoria's death. After Her late Majesty's funeral the gun-carriage was deposited at the Tower, where it remained until brought into use again for the funeral of King Edward. A silver plate which the late King commanded to be affixed to it bears the following inscription:—

> "This gun-carriage bore the remains of Her late Most Excellent Majesty Victoria, Queen of Great Britain and Ireland, Defender of the Faith, Empress of India, in the funeral procession at Windsor from the railway station to St. George's Chapel, Windsor Castle, on the 2nd February, 1901, when it was drawn by sailors of the Royal Navy from His Majesty's ship *Excellent*, and again from St. George's Chapel to the Mausoleum at Frogmore, on the 4th February, 1901, when it was horsed by the Royal Horse Artillery."

The gun-carriage will be kept at Whale Island, the great Portsmouth Gunnery School, and another plate is to be affixed recording the use to which the gun-carriage was put on the occasion of the funeral of King Edward.

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The following are the principal appointments which have been made: W. S. Nicholson to be Captain-Superintendent of Torpedo Boat Destroyers; Captains—R. J. Prendergast to "Implacable"; W. F. Slayter to "Carnarvon"; Hon. A. D. Boyle, M.V.O., to "Cumberland"; E. H. Smith to "Africa"; E. P. G. Grant to "Gibraltar"; G. B. Hutton to "Talbot"; F. E. Ryan to "Mars"; E. P. Back to "Sutlej"; H. M. Doughty to "King Alfred"; R. F. Scott, C.V.O., D.Sc., to "President," for British Antarctic Expedition, in command.

The new first-class battleship *St. Vincent* commissioned at Portsmouth on the 3rd ult. for service in the First Division of the Home Fleet, where she relieved the first-class battleship *Irresistible*, which ship was reduced to nucleus crew at Chatham on the 10th ult., and paid off on the 1st inst.

The first-class armoured cruiser *Natal*, of the Second Cruiser Squadron,

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paid off at Chatham on the 9th ult., and recommissioned on the following day for a further term of service in the Squadron. The first-class cruiser *Donegal*, of the Fourth Cruiser Squadron, paid off at Devonport on the 16th ult., recommissioning the following day for a further term of service in the Squadron. The first-class armoured cruiser *Lancaster*, of the Sixth Cruiser Squadron, arrived at Sheerness on the 23rd ult. from the Mediterranean; she paid off at Chatham on the 30th ult., recommissioned on the following day for a further term of service in the Squadron, and left on the 3rd inst. to rejoin the flag in the Mediterranean.

An Early Debate on the Torpedo.—In *The Times* of the 6th inst. the following interesting item appears:—

FROM "THE TIMES" OF 1810.

Wednesday, June 6.

The following extract from a debate in the House of Lords is perhaps one of the earliest references to the torpedo as an instrument of naval warfare:—

Safety of the Navy.

Earl Stanhope rose to submit a motion to their Lordships, which he thought related to a subject of more importance than any set of motions that had been before them for a very considerable time past, as it related to that on which the very existence of the nation depended, the British Navy. He had some years ago called their attention to this subject, on which he should now speak plainly, as a man of science would speak, and not like those who bamboozled people with mysteries, and involved everything in hard words and terms from the schools. He would make every noble Peer understand him. His Lordship then adverted to the experiments tried some years back off the French coast, and since then in America, by a Mr. Fulton, for the ascertaining of a mischievous and horrid mode of destroying vessels of any size while floating in the water. He went through the history of these terrible inventions, which operated either by a line thrown into the water, which, meeting the ship, gave the opportunity to the machine to cling to the vessel, upon which the destructive explosion of gunpowder took place, which absolutely would cut any vessel in two (the proof of which had been made some years back in Walmer Roads); or by the immersion of a machine with a trigger which, when pulled, answered the same purpose; or by throwing an engine for the same purpose on a vessel. This person was invited over here, and his Lordship had seen an engagement between him and Mr. Pitt and Lord Melville, signed by them, agreeing in certain events to give him £40,000 and so on, to an immense amount. After the failure of a trial at Boulogne his claim was referred to certain scientific umpires, who awarded him £15,000; since that he had made his experiments in America, where both Jefferson and Madison were present, and had been voted 5,000 dollars. His Lordship was led, at the present moment particularly, to this motion by a pamphlet he had just received from America containing the particulars, with plates, illustrative of the nature and effects of the invention. He then entered into a very scientific discussion and exposition of the theory of fluids, and the principles

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on which the machine acted, and stated that there were means in our power to counteract its dreadful effects, some of which he pointed out. There was also another and more ingenious invention for a more difficult object, namely, the cutting of the cables of blockading vessels when lying off a lee shore; what he wanted to know was this: as the subject had been looked on already as so important by great men, and by men of science, what had been done by Government in the way of providing a remedy, and to what extent? For the purpose of ascertaining this, he had framed a motion, which he read; desiring an account of the measures taken to counteract the effects of these submarine carcases and explosions, and of the *torpedo* triggers, &c., &c.

The question was put, when his Lordship demanded a division, on which the numbers were:—

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France. The following are the principal appointments which have been made: Capitaines de Vaisseau — J. B. Degouy to "Charles Martel"; T. A. Allaire to "Amiral-Charner." Capitaines de Frégate — J. C. Le Gouz de Saint-Seine to "Chevalier" and command of 1st Mediterranean Submarine Flotilla; F. J. Moullé to "Bélier" and command of the 1st Channel Submarine Flotilla; H. Salaün to "Francisque" and command of 1st Ocean Submarine Flotilla.—*Journal Officiel de la République Française.*

Policy of the Minister of Marine.—On the discussion of the Naval Budget in the Chamber on 23rd February, Admiral Boué de Lapéyrère, in a maiden speech which was much applauded for its concision, its vigour, and cheerful optimism, described his policy as follows:—

He had found the Northern Squadron a squadron of non-homogeneous vessels not fully manned, the same remark applying to the Mediterranean Squadron, with the addition that the condition of training of officers and crews left much to be desired. The port of Toulon was incapable alone of supplying the needs of the Mediterranean Fleet, and Bizerta, though being developed as fast as possible, will only be able to deal with seven battleships after 1912; this being the position, he had to enquire if the ocean ports could not be of some assistance, and with their help he could now guarantee that by the month of May there would be two squadrons ready in every respect for sea, and at the present time there is a squadron of four large battleships, on none of which is there a single man short. He had found it necessary, after conferring with the *Prefets Maritimes* and with the approval of the *Conseil Supérieure de la Marine*, to strike 30 vessels off the list of the fleet as inefficient for present conditions.

He intends to establish in the Far East a division of three fast armoured cruisers of the *Dupleix* class. In the Atlantic and Mediterranean the squadrons will be more constantly exercised at sea, and before

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the end of 1910 all the squadrons should be in good training, and the instruction which the crews have received will give them increased confidence and a renewed feeling of good comradeship.

The graving docks are being put in a good state of repair, and the different technical schools are now well adapted for their special branches of instruction. Above all things, the Admiral Minister holds that a naval officer should be, as far as possible, continually at sea; it is no use having good ships armed with the most perfect guns if the officers are not kept constantly practising them on their natural element, and it has been decided that officers before specialising in the schools shall have a minimum of two years' service in their rank afloat, and that there will be no exceptions to this rule on any pretence whatever.

The position of *aspirants* has been raised, and they will be now called *enseigns de vaisseau* second class, and it is hoped they will appreciate their increased responsibility and show themselves worthy of it.

New Naval College.—The Minister of Marine has decided in favour of the scheme for abolishing the training-ship *Borda* and building a Naval College on shore at Brest at a cost of 300,000 francs (£92,000), and orders have been issued to Vice-Admiral De Marolles, the *Prefet Maritime* at Brest, to make the necessary preparations for commencing the work without delay. The position selected for the new college is known as "la Pointe."

The Firings Against the "Iéna."—The projectiles fired against the *Iéna* were of the following types:—

1. Steel armour-piercing shell loaded with black powder, such as are found in the magazines of all French fighting ships, of calibres 6·5-inch, 7·7-inch and 12-inch.

2. Steel armour-piercing shell of the same calibres, but in which the black powder had been replaced by melinite.

3. Steel armour-piercing shell of the new heavy type, 4 calibres long. 9·5-inch and 12-inch guns and loaded with melinite; 13¼ pounds for the 9·5-inch and 29 pounds for the 12-inch.

4. Semi armour-piercing shell, model R/2 for the 6·5-inch, 7·7-inch and 12-inch calibres. These shell are supposed to contain 6 per cent. of their weight of melinite.

5. Cast-iron shell loaded with black powder.

6. A special type of shell carrying 10 per cent. explosive.

7. Shell of the army type (model P and model 1891) of 9·5-inch calibre and carrying, respectively, 75 and 77 pounds of explosive.

With the exception of the army shell, all tested were specially made and loaded at Gâvres. The firings took place at a distance of from 400 to 600 metres (437 to 656 yards) with reduced charges.

The armour-piercing shell loaded with black powder gave good perforation, but their bursts after penetration had very little effect. The fragments were few in number, four or five at most.

The armour-piercing shell loaded with melinite were fired with a new fuse, the Watson fuse. As with the others, the perforation was easily obtained. The fragmentation was much more complete and quite destructive.

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The heavy steel armour-piercing shell containing about 3 per cent. of their weight of melinite (9·5-inch shell weigh 485 pounds and the 12-inch 970 pounds) gave excellent results. They perforated, always burst after perforation, and their fragments destroyed everything within a certain radius of the point of burst. We are told, however, that these shell are not yet perfected. Several seem to have tumbled in flight.

The semi armour-piercing shell seem to have justified the hopes of the marine artillerist service. They perforated more than half their calibre of armour, bursting at the proper point and producing frightful damage.

The cast-iron shell, loaded with black powder, made enormous holes in structural plating, against which they were fired.

It appears that the shell containing 10 per cent. of explosive, specially manufactured for these tests, gave no such results as those described by Semenoff.

The army shell show themselves quite unsuitable for the needs of the navy. The shell P broke up upon quite thin plating. Neither did it burst after having gone through still thinner plates. The model 1891 shell, although better, is scarcely suitable for naval use.

Only in a few cases was anything set fire to on board the *Iéna*. A few dogs were asphyxiated and burned on the exterior, but several went through all the firings.

These tests show conclusively that what is needed is steel shell capable of perforating armour, whether armour-piercing or semi armour-piercing. They should be heavy and contain high explosive. Their present fuse, called the Gâvres fuse, should be replaced by the Watson fuse, or a similar one.

The tests show that for an armour-piercing shell to produce a truly frightful effect, after perforation, it is not necessary that it contain as much explosive as many technical people have hitherto demanded.—Abstract from *La Vie Maritime*.

New Pattern Naval Projectile.—The gun practice recently carried out at the hull of the Iéna has been of considerable importance in trying the new 305-mm. (12 inch) shells destined for the guns of the six battleships of the *Danton* class and the new 240-mm. (9·4-inch) shells for the guns of the new battleships under construction. The results have been kept confidential. The weights of the new projectiles are, however, stated to be as follows: The 305-mm. (12-inch) shell is increased from 340 to 440 kilogrammes (749 to 969·8 lbs.), and the bursting charge of melinite from 12½ to 13 kilos. (27·5 to 28·6 lbs.). The weight of the 240-mm. (9·4-inch) projectile is 220 kilogrammes (484 lbs.). and the bursting charge is 6½ kilos. (14·3 lbs.) of melinite. The length of these projectiles is 3 calibres 44. The object sought for is to obtain the maximum capacity of explosive compatible with the maximum power of perforation.—*Le Temps*, *La Vie Maritime*, and *United States Naval Institute Proceedings*.

Japan.

Foundering of a Submarine.—On 16th April last, submarine No. 6 foundered while manœuvring in Hiroshima Bay, and all her crew perished. She was commanded by Lieutenant Sakuma Tsotomu, and after the vessel was raised, the following letter of farewell

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from him was found in her conning-tower. We have no hesitation in reproducing this remarkable document, which will be read with interest by many. The translation from the original, which was published in the Japanese Press, appeared in the *Kobe Herald*, and is as follows :—

"Although there is, indeed, no excuse to make for the sinking of His Imperial Majesty's boat and for the doing away of subordinates through my heedlessness, all on the boat have discharged their duties well, and in everything acted calmly until death. Although we are departing in pursuance of our duty to the State, the only regret we have is due to anxiety lest the men of the world may misunderstand the matter, and that thereby a blow may be given to the future development of submarines. Gentlemen, we hope you will be increasingly diligent without misunderstanding (the cause of this accident), and that you will devote your full strength to investigate everything and so ensure the future development of submarines. If this is done, we shall have nothing to regret.

"While going through gasoline submarine exercise we submerged too far, and when we attempted to shut the sluice-valve the chain in the meantime gave way. Then we tried to close the sluice-valve by hand, but it was then too late, the rear part being full of water, and the boat sank at an angle of about 25°.

"The boat rested at an incline of above 13°, pointing towards the stern.

"The switchboard being under water, the electric lights gave out. Offensive gas developed, and respiration became difficult.

"At about 10 a.m. on the 15th the boat sank, and under this offensive gas we endeavoured to expel the water with a hand pump.

"At the same time as the vessel was being submerged, we expelled the water from the main tank. The light having gone out, the gauge cannot be seen, but we know that the water has been expelled from the main tank. We cannot use the electric current entirely. The electric liquid is overflowing, but no salt water has entered, and chlorine gas has not developed. We only rely upon the hand pump now.

"The above has been written under the light of the conning-tower, when it was 11.45 o'clock. We are now soaked by the water that has made its way in. Our clothes are pretty wet, and we feel cold.

"I had always been used to warn my shipmates that their behaviour (on an emergency) should be calm and delicate while brave; otherwise we could not hope for development and progress, and that at the same time one should not cultivate excessive delicacy lest work should be retarded. People may be tempted to ridicule this after this failure, but I am perfectly confident that my previous words have not been mistaken.

"The depth gauge of the conning-tower indicates 52, and despite the endeavour to expel the water, the pump stopped, and did not work after twelve o'clock.

"The depth in this neighbourhood being ten fathoms, the reading may be correct.

"The officers and men of submarines must be appointed from the most distinguished among the distinguished, or there will be annoyance

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in cases like this. Happily all the members of this crew have discharged their duties well, and I feel satisfied.

"I have always expected death whenever I left my home, and therefore my will is already in the drawer at Karasaki. (This remark refers only to my private affairs, and it is not necessary. Messrs. Taguchi and Asami! Please inform my father of this.)

"I respectfully beg to say to His Majesty, I respectfully request that none of the families left by my subordinates shall suffer. The only thing I am anxious about now is this.

"Please convey my compliments to the following gentlemen (the order may not be proper): Minister Saito; Vice-Admiral Shimamura; Vice-Admiral Fujii; Rear-Admiral Nawa; Rear-Admiral Yamashita; Rear-Admiral Narita. (Atmospheric pressure is increasing, and I feel as if my tympanum were breaking.) Captain Oguri; Captain Ide; Commander Matsumura (Junichi); Captain Matsumura (Riu); Commander Matsumura (Kiku)—my elder brother. Captain Funakoshi; Instructor Narita Kotaro; Instructor Ikuta Kokinji.

"12.30 o'clock, respiration is extraordinarily difficult.

"I mean I am breathing gasoline. I am intoxicated with gasoline.

"Captain Nakano.*

"It is 12.40 o'clock."

[*This is the name of another officer to whom the dying officer desired to be remembered.]

United States.

Personnel of the U.S. Navy.—Rank, Age, and Physical Test of Officers.—The annual report of Rear-Admiral W. P. Potter, U.S. Navy, Chief of the Bureau of Navigation, contains the following.

Vice-Admirals.—The Bureau renews the recommendation that the grade of vice-admiral be revived and recommends that steps be taken to secure from Congress the necessary legislation to provide for at least five officers of this grade. In foreign navies there are three distinct grades which are above the rank of rear-admiral, and it invariably happens that in all international assemblages of men-of-war the officer in command of the United States fleet is outranked by a foreigner. The Bureau is of the opinion that no officer should be appointed a vice-admiral who has not commanded a fleet, squadron, or division.

Age of Commanding Officers.—The good effects of the Navy *personnel* bill, which became a law in 1899, are beginning to become apparent in the reduction of the age at which officers are arriving at command rank; officers are now being promoted to the grade of commander at the age of 40, and this age is gradually being reduced. The number of vacancies above the grade of junior lieutenant during the last fiscal year fell short of the required number by 9, and the Board of rear-admirals was therefore called upon to select sufficient officers to make the vacancies required; accordingly, five captains, one commander, and three lieutenant commanders were compulsorily retired.

Extra Numbers.—There are at present upon the active list of the Navy 10 captains and 17 commanders, formerly engineer officers, who were transferred to the line to perform engineering duty on shore only. These

officers, in consequence, are not eligible for assignment to duty afloat, or to any other shore duty than that specified. With the increase of the Navy the Bureau asserts that there is an insufficient number of captains and commanders to perform all the necessary duty to which officers of these grades are, by regulation, eligible for assignment. Through the operation of existing law these former engineer officers will eventually attain flag rank, but will not be eligible to perform any duty to which officers of that rank are now assigned. This will cause a shortage of officers of flag rank for duty both afloat and ashore.

The situation would be greatly relieved if the 27 officers above-mentioned were made additional numbers in their grades. The effect of this legislation would be to prevent officers who are not eligible for sea duty from occupying the authorised numbers intended by Congress to perform sea duty and would give about one year's promotion to the junior commanders and lieutenant-commanders, and thus bring officers into command rank at an earlier age. It is recommended that the *personnel* act, approved 3rd March, 1899, be amended accordingly.

Physical Tests.—In accordance with instructions from the President, a system of physical tests has been prescribed for all officers of the Navy. These tests are conducted each calendar year and permit the officer concerned to choose between walking 50 miles, riding a bicycle 100 miles, or riding horseback 90 miles during certain prescribed times.

Engineer Duty.—The long-recognised defect in the amalgamation feature of the Navy *Personnel* Bill is the fact that no provision whatever is made for designing engineers. It is hoped that this defect will be remedied by the recent decision of the department to establish a post-graduate school for engineers at the Naval Academy, Annapolis, Md. To this school officers will be sent who desire to specialise in steam engineering, and each year two officers will be selected for permanent assignment to engineer duty, with a view to their rendering service as designing engineers. The school will begin 4th October of this year, and already a large number of applications from officers have been received for the course of instruction.

Examination of Warrant Officers.—The law which provides that warrant officers must be examined by a Board consisting of chief warrant officers is often a source of embarrassment to the Bureau, as it is difficult to assemble such a Board, particularly on the Pacific coast. It is frequently impracticable to constitute such a Board on distant stations, and in consequence the examination of officers of these grades is delayed for long periods. This is an injustice to the officer affected, as he is deprived of the increase in his pay until he is qualified for promotion. The Bureau sees no reason why warrant officers should not be examined by a regular examining Board, and recommends that legislation be asked from Congress to remedy this defect.

Midshipmen's Practice Squadron.—The Bureau recommends that battleships be assigned to duty for the Naval Academy practice squadron. It is deemed to be of the greatest importance that the midshipmen, who are the coming officers of the navy, should receive their early instruction on board vessels of the type they will afterwards be required to serve in, and it is suggested that at least three of the older suitable battleships be

assigned to the Naval Academy practice squadron and fitted in ample time with the necessary conveniences for a large number of midshipmen.

Marines Afloat.—On 12th November, 1908, an executive order was issued defining the duties to be performed by marines in time of peace. This order contemplated the withdrawal of marines from duty afloat, and, accordingly, the marine detachments were withdrawn from a number of vessels, and orders were issued for the removal of the marine detachments from all other vessels upon their arrival in home waters.

On board vessels from which the marines were removed the duties formerly performed by them were carried on by bluejackets in a thoroughly satisfactory manner.

Congress having described in the annual appropriation bill that no part of the appropriation should be available for the Marine Corps unless marines performed on board battleships and armoured cruisers as heretofore, the marine detachments were returned to those vessels from which they had been removed,

Training of Gunner's and Machinist's Mates.—The Bureau are of opinion that all gunner's mates should be machinists by trade because of the complexity of ordnance mechanisms and the constant care and attention they require, but it can see no way to reach this desirable end, as the pay of gunner's mates is less than that of machinist's mates, and it is not likely that experienced machinists will enlist in the branch which is the more poorly paid. The increasing complexity of torpedo installations and the use of the torpedo, together with instruction in mines, makes a certain degree of specialisation necessary, and it has been found to be impracticable in the six months' course of the seaman gunner's class to cover more than adequately the subjects pertaining to guns, mounts, turrets and sights, taught at the Washington Navy Yard; hence it has been found advisable to divide the class into two sections, one at Washington yard, taking the course in guns, mounts and turrets, and the other at the torpedo station at Newport, studying torpedoes and mines. The course at Washington is six months, and that at the torpedo station eight months. Diving is taught in both classes, and graduates are detailed to ships either for duty with the general battery or with the torpedo and mine installations. Machinist's mates have also been detailed to take the Newport course. They thus become familiar with repairs to torpedoes and mines, and will be of great assistance on board vessels carrying these weapons. In addition the assistance they are required to give to gunner's mates during the course in machine processes will be most beneficial. The Bureau is going to detail machinist's mates with the class at the Washington Yard, where there is a surplus above the needs of the fleet. During the last fiscal year 238 men were in attendance at the classes, of whom 106 finished the training.

Yeomen and Musicians.—Yeomen and musicians are grouped by the Bureau in the same class so far as developing an unwillingness in some cases to give the Government which trained them the benefit of their services when once trained. Rear-Admiral Potter, reports that the demand for yeomen is still greater than the supply, and that a large

percentage of them do not remain in the Service, as upon discharge they are highly-trained men, many of them expert accountants, stenographers and typewriters, and so able to command higher wages in civil life than the Navy can pay. In view of the vast amount of property to be cared for on modern ships, it has been considered advisable to select from the classes men that are especially adapted as accountants and for the care and accountability of property, and these men are now being detailed to the pay departments of ships and to other departments in charge of stores. As to musicians, it is found that those who attend the school for musicians at Norfolk and Newport generally apply for their discharge or fail to re-enlist as soon as they are musically competent to better themselves outside. If qualified musicians could be induced to enlist in the Navy these classes would not be necessary, but the pay is too small to attract any but incompetent or half-trained musicians from civil life. The Bureau is convinced that the complements of bandsmen will not be filled until their pay is raised.

Supply of Men.—The opening of the training station at Chicago about 1st July, 1910, with its quota of 1,500 apprentice seamen, is expected to relieve the situation which now confronts the Bureau in the matter of giving such men four full months of instruction. The commissioning of new ships and the constant demands of the fleet for men often make it necessary to curtail the period of instruction in order that vacancies afloat may be promptly filled. The demands of the fleet for ordinary seamen and coal passers have been met in the last year by the output from the naval training stations at Newport, R.I., Yerba Buena Island, San Francisco and Norfolk, Va. The practice of permitting apprentice seamen of good physique to elect the engineer branch and leave the training stations as coal passers is giving good results. The rigorous military training at the stations is as important to the newcomer on board ship in the engineer department as on deck, and relieves the officers afloat of much of the setting-up and preliminary instruction in the care of the person, clothing and adaptation to ship life which before was necessary. Twenty per cent. of the coal passers are enlisted and sent direct to the ships, and as they are older and already experienced in their calling, they form a good working nucleus in the fire-rooms afloat.—*Army and Navy Journal.*

MILITARY NOTES.

THE KING.

WAR OFFICE, *June 3rd, 1910.*

His Majesty the King has been pleased to assume the rank of Field-Marshal. Dated 7th May, 1910.

The King has been graciously pleased to confer upon the undermentioned Regiments and Corps the honour of becoming their Colonel-in-Chief :—

1st Life Guards.
2nd Life Guards.
Royal Horse Guards.
Royal Regiment of Artillery.
Corps of Royal Engineers.
Grenadier Guards.
Coldstream Guards.
Scots Guards.
Irish Guards.

WAR OFFICE, WHITEHALL, *June 3rd, 1910.*

The King has approved of the undermentioned appointments :—

To be Personal Aides-de-Camp to His Majesty.

Field-Marshal His Royal Highness Arthur William Patrick Albert, Duke of Connaught and Strathearn, K.G., K.T., K.P., G.C.B., G.C.S.I., G.C.M.G., G.C.I.E., G.C.V.O.

Captain His Royal Highness Prince Arthur Frederic Patrick Albert of Connaught, K.G., G.C.V.O., 2nd Dragoons (Royal Scots Greys).

General His Royal Highness Prince Frederic Christian Charles Augustus of Schleswig-Holstein, K.G., G.C.V.O.

Major His Serene Highness Adolphus Charles Alexander Albert Edward George Philip Louis Ladislaus, Duke of Teck, G.C.V.O., C.M.G., 1st Life Guards.

HONORARY AIDES-DE-CAMP.

To be Honorary Aides-de-Camp to His Majesty.

Honorary Major-General His Highness Sir Madho Rao Scindia, Bahadur, Maharaja of Gwalior, G.C.S.I., G.C.V.O.

Honorary Major-General His Highness Sir Pratap Singh, Bahadur, Maharaja of Idar, G.C.S.I., K.C.B.

Honorary Colonel His Highness Sir Nripendra Narayan, Bahadur, Maharaja of Kuch Behar, G.C.I.E., C.B.

Honorary Colonel Sir Muhammad Aslam Khan, Nawab, Sardar Bahadur, K.C.I.E.

Honorary Lieut.-Colonel His Highness Sir Ganga Singh, Bahadur, Maharaja of Bikaner, G.C.I.E., K.C.S.I., and to be granted the honorary rank of Colonel.

Honorary Lieut.-Colonel His Highness Sir Muhammad Hamid Ali Khan, Bahadur, Nawab of Rampur, G.C.I.E., and to be granted the honorary rank of Colonel.

King George received at Marlborough House on the 4th inst. all the Field-Marshals of the British Army, with the exception of the German Emperor, Austrian Emperor, and Viscount Wolseley.

The party was comprised of Earl Roberts, the Duke of Connaught, Sir Evelyn Wood, Sir George White, Lord Grenfell, Sir C. H. Brownlow, and Viscount Kitchener. They all attended in full uniform, and His Majesty also was in full uniform. The object of the visit was to hand to the King the bâton which is his insignia as a Field-Marshal.

Earl Roberts, as the Senior Field-Marshal present, made the presentation, and addressed a few words to His Majesty in doing so. The King, on accepting the bâton, made a brief reply.

His Majesty the King received on the 7th inst. at Marlborough House the officers and men of the Army who had rendered special service in connection with the funeral of His late Majesty King Edward, and conferred various Orders and medals upon them. The recipients of the honours were :—

The King's Company of the 1st Grenadier Guards, numbering 3 officers and 112 men who supplied the watch for the King's body during the private Lying-in-State in the Throne Room, Buckingham Palace.

The bearer party, numbering 2 officers and 36 men, formed of Colour-Sergeants of the Foot Guards, who bore the coffin at various stages of the Funeral and Lying-in State proceedings.

The gun detachment of the BB Battery, Royal Horse Artillery, numbering 1 officer and 17 men who horsed the gun-carriage on which the coffin was carried through London.

The detachments were drawn up on the lawn at Marlborough House shortly after noon, the King's Company with their colours in the centre, the Artillery on the right, and the Bearer Company on the left.

His Majesty, who was in the undress uniform of a Field-Marshal, was accompanied by the Duke of Connaught, as Colonel of the Grenadier Guards, and Major-General Codrington, commanding the London District. As the King descended the steps from the terrace he was received with the Royal Salute, and after inspecting the line, took his place at the foot of the terrace steps, where was a table on which were arranged the decorations, medals and bars. The officers first received their decorations from the hand of the King, Major Monkhouse (commanding the gun detachment), Captain Hermon Hodge, of the King's Company, and Lieutenant Dennistown (commanding the bearer party) receiving the 4th Class of the Royal Victorian Order, Lieutenants Cavendish, Fletcher, and Viscount Gort receiving the 5th Class of the same Order. Each commanding officer then read out the names of his non-commissioned officers and men, who advanced in turn and received their medal, or in some case bar, from the King, the Artillery coming first. The distribution being completed, the line was re-formed and the two flanks turned inwards to form three

sides of a square, and the King, advancing to the centre, briefly addressed the men, thanking them for the part they had taken in the Lying-in-State and funeral of his father. A Royal Salute concluded the ceremony, and the men then returned to their quarters.

Home. The following are the principal appointments which have been made :—

Major-Generals—E. H. H. Allenby, C.B., to be Inspector of Cavalry; H. H. Parr, C.B., C.M.G., to be Colonel of Prince Albert's (Somersetshire Light Infantry). Colonels—H. H. Burney, C.B., to command 9th Infantry Brigade (Portsmouth), with temporary rank of Brigadier-General; H. E. Watts to command No. 9 District (Eastern Command); C T. Dawkins, C.M.G., to be Assistant Quartermaster-General (Eastern Command); H. G. Fitton, D.S.O., A.D.C., to be Assistant Adjutant-General (Eastern Command).

Indian Army.—H. Mullaly, C.B., C.S.I., to command of Peshawar Infantry Brigade (Northern Army), with temporary rank of Brigadier-Generals; H. D'U Keary, D.S.O., A.D.C., to command of Secunderabad 2nd (Infantry) Brigade (Southern Army); C. J. Melliss, V.C., A.D.C., to command Fyzabad Brigade (Northern Army); A. W. S. Wingate -to be Assistant Quartermaster General (Division of Chief of the Staff).

Military Manœuvres, 1909.—The report of the Military Manœuvres Commission, 1909, which has been issued as a Parliamentary paper (Cd. 5041), shows that there were only four arrests for civil offences, all of which were in the county of Wiltshire. Such a result, the Commissioners state, speaks highly for the discipline of the Army, when it is considered that the troops were in the area for a longer time than on any previous occasion, namely, from 15th August until 23rd September. It is with the greatest pleasure the Commissioners draw attention to the exemplary behaviour of the troops, who received a hearty welcome from the inhabitants throughout the manœuvre area, a striking proof of the popularity of the Army. The Commissioners desire to place on record their sense of the obligation due to those owners and tenants who placed their parks and coverts at the disposal of the troops for the purpose of manœuvring. It was their public-spirited action which enabled the Army to manœuvre this year on lines more nearly approaching to the conditions of active service than has previously been the case.

The Manœuvres Act this year is said to have worked generally satisfactorily, but the Commissioners desire to point out that in certain parts of the country not only is the Act put in force whenever possible for Army manœuvres, but constant applications are made to owners and tenants annually for the use of land for the purpose of command manœuvres, *i.e.*, land near the big military stations at Aldershot and Salisbury Plain. They suggest for consideration that the Act should be put into force for all manœuvres when necessary, and that areas further afield should be selected, provided that the suggested amendments to the Act become law. Restrictions in respect of parks and woods were imposed by

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a few owners and tenants, and certain areas were forbidden to the troops. These areas occasionally become of tactical importance, and the conduct of manœuvres was thus seriously interfered with. As regards the suggested amendments, the Commissioners have considered those set forth in the reports of the Military Manœuvres Commissions of 1903 and 1904, and, in the light of experience of the manœuvres which took place in the year under review, are of opinion that the essential points requiring alteration were embodied in the Bill for amending the Military Manœuvres Act, 1897, which was passed by the House of Lords in 1905, and they regret that this Bill was not proceeded with, and consider that it is impossible for the military authorities to secure full value for the sums voted by Parliament for the training of the Army until the necessary amendments to the Act are made.

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The Rate of Promotion.—The conditions of promotion remain stationary, and although they have not become worse, yet they have not improved. The average length of service in their previous rank of the officers promoted at the end of last year was as follows :—

Lieut.-Generals, four years as Major-Generals;
Major-Generals, six to six years and a half as Colonels;
Colonels, three years as Lieut.-Colonels;
Lieut.-Colonels, four to four years and a half as Majors;
Majors, ten to ten years and a half as Captain for officers on the General Staff; thirteen years to thirteen and a half for regimental officers;
Captains, from ten to eleven years as First Lieutenants;
First Lieutenants, six years and a half as Lieutenant.

Creation of Artillery Masters.—An Imperial Decree, of the 12th July, 1909, orders the creation of Artillery Masters (*Artillerie-Meister*), an auxiliary *personnel* assigned to the service of guns fitted with mechanical installations and the maintenance in working order of the *matériel* of fortress artillery, principally of guns under cupolas. They are also to be employed in the factories and other military establishments, both for the manufacture and maintenance of motors, engines, etc. This *personnel* includes Chief Artillery Masters (*Artillerie Obermeister*) of the 1st and 2nd Class, Artillery Masters of the 1st Class (Sergeant-Majors), 2nd Class (Sergeants) and 3rd Class (Corporals) and of probationers for Artillery Master. They will be recruited, in general, among workmen, who have passed successfully at the time of their entry into the service a practical technical examination, followed afterwards by the *ad-hoc* course, instituted by the State at the Vienna Technological Museum of Arts and Crafts. The length of this purely technical course is two years, and, in order to be admitted, the candidates must have at least six months of active service and pass the entrance examination. They leave as probationer Artillery Masters, and, before taking up their duty, they receive at one of the Artillery Polygons practical instruction in keeping guns in order and the handling of munitions.

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A certain number may be selected for a course of instruction at either State or private establishments, in order to complete their technical instruction in other handicrafts, such as the wood, leather, and textile industries.

Probationers are promoted to 3rd Class Artillery Master as vacancies arise.

Artillery Masters employed in the electrical installations of fortress artillery may be authorised to follow the electric searchlight course organised by the technical military committee.

Creation of New Cavalry Machine Gun Detachments.—At the present time the six independent Cavalry Divisions are the only ones which are provided with a 4-gun machine gun (Schwarzlose system) detachment. According to the *Armeeblatt* this number is considered insufficient, and it has been decided that each of the 42 regiments of cavalry in the Austro-Hungarian Army shall receive a machine gun detachment of two guns. These new detachments will be created as the necessities of the Budget permit.—*Bulletin de la Presse et de la Bibliographie Militaires.*

Automobiles for Supplying Ammunition and the Transport of Wounded.—It is reported that, as the result of trials, which have been successful, the military authorities have acquired 10 automobile wagons of two and a half tons weight, which will be used for supplying ammunition and the removal of the wounded. After distributing the ammunition to the firing line they can easily be transformed into an ambulance for four badly wounded men or twelve lightly wounded.—*Militär-Wochenblatt.*

The Employment of Ski in the Austro-Hungarian Army.—The Employment of ski for military purposes was only a few years ago almost unknown in Austria-Hungary, owing to the difficulties of the tracks in the mountainous regions. In 1907 Herr Zdarski, the inventor of the Alpine ski, was invited to give the Army the benefit of his long experience, and under his direction the first ski course was instituted by the Minister of War, during the winter of 1907-8, which was attended by officers from the IInd, IIIrd, and XIVth Corps. The success was so great that the following year, in February, 1909, the course was extended and was attended by one officer selected from each infantry division of the Common Army and from the *Landwehr* of the Ist, IInd, IIIrd, VIIIth, IXth, XIVth, and XVth Corps. The region chosen was that of Bad Gastein. This time again the results were so satisfactory that a detachment of a Tyrol Jäger regiment, composed of 16 officers and 12 men, made in the height of summer, between 21st and 28th June last year, a long and difficult excursion in the Alps of the Œtzthal, where, without serious accident, they crossed 12 glaciers, ten cols more than 9,000 feet high, and reached summits of nearly 12,000 feet.

The observations made in the course of these exercises and excursions have been condensed by the Minister of War into a text-book *for the employment and practice for military purposes of ski and snow-shoes.*

During last winter the course was divided into two, the exercises being carried out in the Salzburg country at Saint Jean en Pongau and

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at Bad Gastein. Sirty officers and sixty non-commissioned officers of the XIVth Corps took part.

Among some purely military experiments, which were made this past winter under the direction of officers who had been through the ski course in question, two in particular, carried out in Bohemia in the VIIIth Corps, deserve to be noticed. One was the transport of machine guns on the backs of skiers and the establishment of a system of communication between different posts by means of men mounted on ski.

The first experiment was made at Eisenstein, in the Böhmer-Wald, by a machine gun detachment of the 102nd Regiment of Infantry of the VIIIth Corps. Thanks to an ingenious method of packing, the men of the detachment succeeded in carrying guns, mountings, and ammunition—that is to say, a mean weight of 20 to 22 kg. (44 to 48½ lbs.) per bearer, up very steep ascents covered in snow where bât animals could not possibly have gone.

The second experiment was attempted in the depths of the Erz-Gebirge by a detachment of the 6th Regiment of Austrian Landwehr in garrison at Saint Joachimstal. The detachment, composed of 7 officers and 16 men, formed 5 groups, distributed over a distance of 34 km. (21 miles) from the Plessburg (3,100 feet) to the Keilberg (3,800 feet), the points of departure and arrival of the reports, which were to be transmitted from post to post by means of men travelling on ski.

The lieutenant in command, who was himself on the Keilberg, received at forty minutes after noon the first message, which had left Plessberg at 11 a.m. This rapidity of transmission was all the more remarkable, as the exercise was carried out in a snow storm.

Horses in Depôt with the Owners.—In order to assure to the Army at the time of mobilisation the necessary number of saddle-horses, a certain number are entrusted each year to private persons after five months of training, and are called out for the spring review as well as for the autumn manœuvres. These are the *Urlauber-Pferde*, or horses on leave.

Up to the present, when they are well looked after, the military administration have given an annual subsidy of 21 francs (16s. 9½d) per horse to the civilians in charge of them, who became in addition their full owners at the end of six years. It is now reported that the subsidies are to be done away with, but the horses will become the property of those in charge of them somewhat sooner—that is, at the end of five years.—*Revue Militaire des Armées Etrangères.*

Issue of Wire-Nippers to the Infantry and Cavalry.—The different infantry and cavalry units are to receive as an additional implement, nippers intended to cut the wire nets which play so important a part in modern war. The nippers are of two sizes: the medium size, weighing 566 gr. (1¼ lbs.), which are used with both hands; and a small size, weighing 289 gr. (11 ounces), which are worked with one hand.

Each company of infantry and Foot Jägers is supplied with 16 of the small nippers and 4 of medium size; the small ones are issued to each section and the medium size to the Pioneers.

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Each squadron disposes of 8 small nippers and each detachment of cavalry Pioneers of 2 of medium size. The medium sized nippers will cut through 5 mm. (1-5 inch) copper or iron wire, smooth or barbed, and 2 cm. (4-5 inch) of wood, branches or vine stalks. The wire nets should be cut in alleys, to each of which two workers should be sufficient. A net 12 metres (13¼ yards) in size should be cut in 15 minutes, if there is nothing to fear from the enemy's fire; under fire, the operation might take hours, perhaps a whole day even.—*Revue de Cavalerie.*

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The Grand Autumn Manœuvres.—Some fuller details in regard to this year's manœuvres are now to hand, which will be on a greater scale than has yet been reached. In preceding years only about 250,000 Reservists have been called out; this year 271,000 will be summoned, bringing the effective strength of men under arms to nearly 1,000,000. In regard to aerostation, it is further stated that at least four dirigible balloons and ten Wright aeroplanes will be used.

1. *Prussian Army.*

The Ist and XVIIth Corps will manœuvre against each other in presence of the Kaiser. Their order of battle will be submitted to him by the Chief of the General Staff of the Army.

Five divisions of cavalry will be assembled, of which two will be from the Guards and one from each of the Ist, VIIth, and VIIIth Corps. Their composition will be as follows:—

Guard Cavalry Division.—1st, 2nd, and 4th Brigades of the Guard; group of the 1st Regiment of Horse Artillery of the Guard; No. 1 Machine Gun Detachment of the Guard.

Cavalry Division A (Ist Corps).—1st, 2nd, and 37th Brigades (1st Corps); No. 1 group of Horse Artillery Regiment (Ist Corps); No. 5 Machine Gun Detachment (Ist Corps).

Cavalry Division B (VIIth Corps).—13th and 14th Brigades (VIIth Corps), and 22nd Brigade (XIth Corps); No. 10 group of Horse Artillery Regiment (Xth Corps); No. 2 Machine Gun Detachment of the Guard.

Cavalry Division C (VIIIth Corps).—15th and 16th Brigades (VIIIth Corps), and 33rd Brigade (XVIth Corps); No. 8 group of Horse Artillery Regiment (VIIIth Corps); No. 11 Machine Gun Detachment (XVIth corps).

Cavalry Division D (Guard).—3rd Brigade of the Guard; 6th Brigade (IIIrd Corps); No. 3 group of Horse Artillery (IIIrd Corps); No. 7 Machine Gun Detachment (IIIrd Corps).

The Guard Division and Divisions A, B, and C will be exercised respectively at the Camps of Instruction at Döberitz, Arys, Senne and Elsenborn, and will carry out battle exercises. The D Division will be assembled for four days at the Döberitz Camp during the battle exercises of the Guard Cavalry Division.

The B Division, reduced to the 13th and 22nd Brigades, and *minus* the other arms which are attached to it, will carry out in addition a reconnaissance exercise of four days against a provisional division formed from the 13th Regiment of Uhlans (Xth Corps), 7th Cuirassier Regiment (IVth Corps), and 17th Hussar Regiment (Xth Corps).

The Inspector-General of Cavalry will direct this exercise.

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In the IIIrd, XVth, and XVIth Corps, attack exercises without firing under service conditions will be carried out in the course of the Army Corps Manœuvres.

For the execution of an attack exercise, some heavy artillery and communication troops will be attached to the XIXth Corps as they become available.

For the same object some heavy artillery will be placed at the disposal of the XIIIth Corps.

Some simultaneous exercises of Pioneers will be organised under the direction of the Inspectors of Pioneers at Metz, Magdeburg, and Bromberg.

Two simultaneous exercises, the one in telegraphy, the other in wireless telegraphy, will be carried out by the troops of communication.

As regards the Army Corps not taking part in the Imperial Manœuvres, the time for the harvest will be taken into account when fixing the date of the exercises.

In the choice of the terrain for carrying out all the manœuvres, care is to be taken to select ground where the charge for damage can be kept as low as possible.

The Train Battalions of the Guard and Nos. 2, 5, and 6 Train Battalions will be called upon to furnish, as required, the *personnel de surveillance* and the draught horses for the military vehicles during the Imperial Manœuvres.

During the 8th, 9th, and 10th of September there will take place on the Lower Passage (a small river running into Danzig Bay, midway between that town and Königsberg), a battle against a position strengthened by field fortification. This position will be prepared and defended by the XVIIth Corps; it will be attacked by the Ist Corps, which will carry on the assault night and day.

The two Army Corps, which will not be reinforced for these manœuvre by units detached from other Corps, as has been wrongly reported in some quarters, will appear not only in the new field uniform, but even with the war equipment for all arms (*Kriegsgepäck und Kriegsbelastung*).

2. *Bavarian Army.*

The three Bavarian Corps will carry out Grand Manœuvres in conformity with the Manœuvre Instructions.

For this purpose, the 3rd Division (Landau) will be called on to manœuvre in that part of the territory of its Army Corps situated on the right bank of the Rhine (Wurzburg-Bamberg region).

The Balloon Detachment will march with the Ist Corps.

A tour of Cavalry Cadres will be carried out. For both the Prussian and Bavarian Armies all the foot troops will return to their garrisons at the latest by the 30th September.

Winter Exercises of the Automobile Detachment of the Troops of Communication.—The automobile detachment of the troops of communication[1] carried out at the end of the month of February some winter

[1] Created 1st April, 1907. According to the last List it comprises, as officers of the Reserve, 2 captains, 8 lieutenants, and 41 sub-lieutenants. The distinguishing mark of the uniform is a wheel winged with three thunderbolts on the shoulder-straps or epaulettes.

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exercises in the Harz, lasting fifteen days. The automobiles which took part were 5 large passenger vehicles, 10 small automobiles (*kleinauto*), 4 light army trains (1 traction engine with a trailer wagon), and some motor cycles.

The object of these exercises was the learning to surmount the difficulties of driving through the snow and over rough and broken ice-coated roads.

These difficulties are invariably met with in the Harz, where the snow often lies over three feet deep; it was necessary on several occasions to extricate the vehicles by manual labour, and even to drag them out by horses before they could continue their journey.

These manœuvres are instructive, both for the opportunity afforded for testing the ingenuity of the drivers in protecting their wheels under difficult circumstances, as also for realising the considerable diminution, under such circumstances, of the value of automobiles for supplying stores and ammunition as well as for the transmission of information or orders.

Volunteer Motor Cyclists.—After laborious negotiations between the Ministry of War and the *Deutscher Motorfahrer Verband*, the creation of a Corps of Volunteer Motor Cyclists, analogous to the Volunteer Automobile Corps, has been definitely decided on, and will be formed on the following basis :—

The Volunteer Motor Cyclists (indicated by the initials S.F., *Schnellfahrer*) must be of German nationality, have completed their active military service, possess the requisite physical aptitudes, and possess efficient motor cycles with their accessories.

In case of mobilisation, the S.F. would receive for clothing and equipment a round sum of 200 marks (£10) with an allowance for wear and tear of 1s. 3d. per diem.

His arms, supplied by the military authorities, will consist of a revolver or automatic pistol of the 1908 model.

The S.F. will receive in addition pay at the rate of 10s. 6d. for service inside the Empire, with an additional 2s. 3d. beyond the frontiers. They are entitled to rations, lodging and medical attendance under all circumstances. The rates of pension to be granted in case of accident or death are no less generous.—*Revue Militaire des Armées Etrangères.*

Improvised Blanket Stretcher for Mounted Troops.—In the *Militär-Wochenblatt* of 30th April, 1910, Oberstabsarzt Blau describes his "Sattel-zeugtrage," a modification of Petsche's blanket stretcher.

He gives the following directions :—

1. Four men are ordered to unscrew the balls on the top of the helmet or to take off their sword knots.
2. Sword knots are to be double knotted and the tassel passed through the remaining loop to form a firm ball.
3. The blanket is next taken from the wounded man's horse or from a horse which has been killed.
4. Four stirrups with stirrup leathers are taken if possible from the off artillery horses.
5. At each of the four corners of the blanket is placed a helmet ball or knotted sword knot; the stirrups with leathers are

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placed alongside with the foot piece of the stirrup directed towards the blanket.

6. A loop of blanket is next pulled through the opening in the foot piece of the stirrup.
7. The helmet ball or knotted sword knot is pushed into the loop of blanket.
8. The blanket is now pulled back again through the opening of the foot piece in the stirrup, and at the same time so arranged as to form a firmly fitting cap for the helmet ball or knotted sword knot.
9. The helmet ball will now be found to give a firm hold on the blanket, and it is not liable to slip.
10. All the four stirrup grips to be thoroughly tested by pulling.

This improvised stretcher should be prepared in five minutes; for a short distance it may be carried by the stirrup irons alone. It is preferable, however, to let out the stirrup leathers to their full length and use them as slings, as they are sufficiently long to be placed over the opposite shoulder. By using the stirrup leathers as slings, two bearers (instead of four), one at either end, can carry a patient; the slings can also be used for suspending the patient in an ambulance wagon. With four bearers using the slings, one can take either end and by fixing two more stirrup leathers in the middle of the sides of the blanket the other two can support the body of the patient and prevent the blanket from sagging. If the fifth and sixth stirrups are not available, the third and fourth bearers can cross hands under the blanket, and in this way materially assist in carrying the patient.

Japan. *A New Automatic Gun.*—According to the *Revista-Militar*, trials have been made at the School of Musketry, at Tvyama, in presence of the Emperor, of an automatic rifle invented by Major Nambu of the artillery and Captain Hino of the infantry. Its working is similar to that of machine guns, but is simpler, and a soldier can carry it like an ordinary rifle without his movements being in any way embarrassed. When the gun is fired the breech-block opens of itself and the empty cartridge case is automatically expelled, and a new cartridge is entered into the chamber by the closing of the breech. It is sufficient to press the trigger to fire.—*Bulletin de la Presse et de la Bibliographie Militaires.*

Special Cavalry Manœuvres.—Since the war in Manchuria special cavalry manœuvres have been introduced in the Japanese Army. In previous years the two independent cavalry brigades have taken part in them, several field batteries being attached to them.

Last year these manœuvres took place at the beginning of November in the three provinces of Ivateken, Aomori and Mixgé. In addition to the two already existing brigades, it had been intended that the 3rd Brigade organised last May at Monoka should also take part, but it was found that the organisation of the brigade was not sufficiently advanced to allow of this. The artillery consisted of four field batteries, with, in addition, as an experiment, two horse artillery batteries, an

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arm which up to recently has not existed in Japan, but the creation of which has been called for since the last campaign. It is reported that these two batteries will be retained, and four others will be formed, so that the independent cavalry brigades will each have two.

Cavalry Contingent in 1909.—Out of 78,429 men which were incorporated in the Army last year, the cavalry received 3,940 recruits, a sensible increase over previous years. This is owing to the recent creation of the two new brigades of independent cavalry, numbered 3 and 4.—*Revue de Cavalerie.*

The Japanese field artillery have adopted a fuse timed for ranges up to 8,200 yards, in place of the former 5,470 yards. The change is due to experience gained in the recent war, when the Japanese gunners had frequently to use percussion fuses at long ranges, while the Russians were able to continue using their time fuses by reason of the latter burning for a longer period.

Russia.

Suppression of Issues of Brandy in the Army.—The Russian Regulations authorised until recently the issue of brandy to the troops under the following circumstances:—

Christmas Day, Easter Day, the Fête Days of the Emperor, Empress and Tsarevitch, the Empress Mother, the Honorary Chief of the Regiment, the Regimental Fête Day and that of the Company; in addition, distributions were permitted in certain special cases (bad weather, fatiguing work and marches) in order to keep up the strength of the men. In every case these issues had to be prescribed by the commandant of the regiment or by the commander of a detached company.

The usual ration was 6 centilitres (about one-ninth of a pint); for non-drinkers of brandy a money allowance was given instead.

The *Prikaz* 584, of January, 1909, directed the replacing of this authorised portion of brandy by one of wine or beer, or by an improvement in the messing; the nature of the substitution, variable according to the season and according to the custom of the barracks, is left to the Chief of the Corps.

The same *Prikaz* forbids:—

1. The sale of vodka and strong alcoholic drinks by the soldiers' canteens; the sale of wine and beer is allowed.
2. The distribution of brandy by the heads of every grade to an entire unit, in time of peace as in time of war; it is permitted only to give brandy to isolated cases as a remedy.

On this question, the *Invalide Russe* (No. 11 of 1909) gave the following information: The Committee of Medical Studies and the principal Inspection of Military Medicine have given their full approbation to the adoption of these measures. The Chiefs of Corps were also called upon to give their opinion. Out of 966 heads of Corps, 782—that is to say, 81 per cent.)—were in favour of replacing the brandy furnished to the units by the Treasury by an improvement in the messing; 808—that is to say, 85 per cent.—pronounced in favour of the forbidding the sale of brandy in the men's canteens.

Russia.

An Aerial Fleet for Russia.—On the 12th February, according to the *Russkii Invalid*, 15th February, 1910, a general meeting of the "Committee for strengthening the Russian Fleet" was held, under the presidency of H.I.H. the Grand Duke Alexander Michaelovich, for the purpose of deciding what was to be done with the balance of the money remaining in the hands of the Committee.

The Grand Duke, in opening the proceedings, said that the question to be decided was whether the Committee would devote the balance available, to the construction of an aerial fleet in accordance with the recently expressed wish of the subscribers. Since the formation of the Committee, during the recent war, for the increase of the Russian fleet, nearly £1,700,000 had been collected. Eighteen torpedo cruisers and four submarines, which now formed the nucleus of the Baltic fleet, had been built.

In July last, it was proposed to order a turbine cruiser and another submarine, but as the actual type of vessel was not definitely decided upon, the order was not then actually given. That month, an event occurred which startled the whole world: M. Blériot flew across the English Channel in his monoplane.

This success of a machine heavier than air, had deeply impressed the speaker with the conviction that, in the near future, the country which first possessed an aerial fleet would be victorious in any future war. The Committee, however, did not at that time feel justified in diverting funds subscribed for naval purposes, to the construction of an aerial fleet.

"I was told," exclaimed the Grand Duke, "that the formation of an aerial fleet was a matter for the Government, and that a public subscription was only appropriate in time of war. But, gentlemen, do you really consider that we are now living in a time of peace? Look to the East and West. Never have preparations for war been carried on with more feverish haste. Remember last year. Are we really in a position to consider peace as assured for many years? Woe to the nation which does not prepare for war, which does not strain every nerve to become stronger than its enemies!"

The speaker then continued, to the effect that there remained at the disposal of the Committee some £90,000, which, though a mere drop in the ocean if assigned to naval construction, formed a substantial sum for aeronautical purposes. The answers received in reply to the question addressed to all subscribers to the fund were, with few exceptions, in favour of the money being devoted to an aerial fleet.

Fortunately, it was easier for Russia to build airships than *Dreadnoughts*. "I am firmly convinced," continued His Imperial Highness, "that within ten years, a naval fleet will be unnecessary. It would be powerless against a fleet of airships. Germany already possesses 24 airships, and—what is even more—a trained body of aeronauts; France is turning her attention to heavier-than-air machines; and it is absolutely essential that Russia should possess an aerial fleet, if she is to avoid the danger of a crushing defeat."

A report was then read showing that in answer to the question addressed to subscribers 333 replies had been received, of which only 10 were in favour of the money being devoted to the navy, while four were

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in favour of both navy *and* airships. The remainder were all in favour of the balance available being at once devoted to the construction of an aerial fleet.

Finally it was resolved, by a majority of 30 votes to 3: (*a*) to devote the balance available (about £90,000) to the construction of an aerial fleet; (*b*) to request His Imperial Majesty the Emperor to approve the opening of a special subscription for the same object; and (*c*) to form a special sub-Committee for aeronautical purposes, the presidency of which His Imperial Highness the Grand Duke was graciously pleased to accept.

Spain.

Changes and Promotions.—As the result of insubordinate demonstrations made by certain officers of the Madrid garrison, the Commander of the 1st Military District (Madrid) has been relieved of his command and replaced by Lieut.-General De los Rios y Nicolau, Chief of the General Staff, who in his turn is replaced at the Ministry of War by Lieut.-General Parrado, Commander of the 7th District. Lieut.-General Tablas, a Member of the Supreme Council of War, becomes Commander of the 7th District, and his place on the Council is filled by Lieut.-General Castellanos y Tapia, Commander of the 3rd District.

On the 23rd January, on the occasion of the King's birthday, the two senior Generals in the Army, Weyler y Nicolau and Polavieja y del Castillo, were promoted to the rank of Captain-General; Weyler, who may be remembered as the somewhat notorious Captain-General of Cuba, retains his appointment of Commander of the 4th District (Barcelona); but Captain-General Polavieja, who was President of the Supreme Council of War, vacates that appointment and is succeeded by Lieut.-General Suarez Valdes.

New Organisation of the African Garrisons.—The composition and strength of the forces judged necessary for the security of the Spanish possessions in North Africa in consequence of the return of the Expeditionary Force, have been fixed as follows:—

1. *Infantry.*—The regiments No. 11 (San Fernando) and No. 42 (Ceriñola), which constitute the Carbo Brigade, the last sent out to Africa, remain provisionally at Mélilla.

The garrison of that place included on the 10th February, four regiments of infantry made up to the following strength: 82 officers (1 Colonel, 4 Lieut.-Colonels, 3 Majors, 16 Captains, 53 Lieutenants, and Sub-Lieutenants, 3 Doctors, 1 Chaplain, 1 Bandmaster); 3,026 non-commissioned officers and privates (77 sergeants, 171 corporals, 25 bandsmen, 72 hospital attendants, 60 drivers); 74 animals (25 officers' chargers, 18 draught mules, 5 pack mules.

Matériel.—6 ammunition wagons, 3 baggage wagons, 51 pack saddles, with 240 pickaxes and 360 spades.

The two Ceuta regiments, which are at present about 2,000 strong, will be reinforced and raised to a strength approximate to the above.

In addition, the third battalions of the two regiments forming the Carbo Brigade, after being newly organised at home, will train the

Spain.

recruits destined for the two battalions at Mélilla, and will be despatched to Africa at a date which will be fixed later.

2. *Artillery.*—No decision had been come to up to the end of January.

3. *Cavalry.*—In each of the fortresses of Ceuta and Mélilla will be organised a group of three squadrons of cavalry composed as follows:—30 officers (1 Lieut.-Colonel, 2 Majors, 5 Captains, 17 Lieutenants, 1 Doctor, 2 Veterinary Surgeons, 1 Instructor of Equitation, and 1 Chaplain); 352 non-commissioned officers and men (13 sergeants, 37 corporals, 9 trumpeters, 9 farriers, and 3 blacksmiths); 340 horses.

This *personnel* will be drawn from some of the regiments at home whose strength will consequently be reduced. In addition the two squadrons of the Marie Christine Regiment of Cazadóres, which went to Mélilla last August with the infantry division from Madrid, will be joined by the two other squadrons of the regiment, which will then provisionally form part of the garrison of Mélilla.

4. *Engineers.*—To each of the two fortresses is assigned a regiment of Engineers (the 1st Regiment at Ceuta and the 7th at Mélilla), constituted as follows:—42 officers (1 Colonel, 2 Lieut.-Colonels, 3 Majors, 12 Captains, 20 Lieutenants and Sub-Lieutenants, 1 Doctor, 1 Veterinary Surgeon, 1 Chaplain, and 1 Instructor of Equitation); 900 non-commissioned officers and men (24 sergeants, 89 corporals, 15 buglers, and 10 mechanics); 49 horses and 135 mules; 10 wagons; 80 pack chests of technical *matériel*; *matériel* for 17 telegraph stations, with 41 kilometres (25½ miles) of cables.

The *personnel* and *matériel* to raise the two regiments to the above-mentioned strength are to be drawn from the other regiments at home.

5. *Military Administration.*—The Direction (*Commandancia*) of Military Administration created during the campaign at Mélilla by Decree of the 24th August last is to be maintained and another is to be created at Ceuta on similar lines but with a somewhat smaller staff.

The composition of the troops of the "*Commandancia*" is as follows:—19 officers (2 War Commissaries—Sub-Intendants of the 2nd and 3rd Class; 14 Officers of Administration—5 of the 1st Class and 9 of the 2nd; 3 Veterinary Surgeons); 540 non-commissioned officers and men (10 sergeants, 33 corporals, and 13 non-commissioned officer mechanics); 393 animals (16 officers' chargers, 37 horses for soldiers, 240 draught mules and 100 pack mules).

As *matériel*, this unit disposes of 6 double field ovens, 15 wagons (1893 Model), 9 drays (Model 1897), 3 cisterns on wheels, and 27 baggage wagons.

6. *Medical Service.*—The hospital sections at the present time at Mélilla and Ceuta are transformed into mixed companies, composed as follows:—4 Doctors and 1 Veterinary Surgeon, 6 Sergeants, 24 Corporals, 172 men (hospital attendants or drivers); 10 saddle horses, 24 draught mules, and 52 pack mules.

Finally, among the new native troops raised in the Spanish Possessions are at Mélilla a mixed company of horse and foot soldiers, who will perform police duty in the territory of the Kebdana. At Ceuta a squadron of Moorish Cazadóres of the Volunteer Militia is also maintained.

Spain.

The Cost of the Military Operations in North Africa.—An Extraordinary Credit of 67,610,420 pesetas (£2,704,417) has been allotted to the Minister of War for the settlement of the expenses incurred by the military operations in North Africa. A sum of 300,000 pesetas has been allotted to the Minister of Marine for the same purpose.

The War Credits are distributed as follows :—

	Pesetas.	
Troops (Pay, Clothing, etc.)	15,496,700	(£619,868)
Money Grants to Families of Men Called up	100,000	(£4,000)
Artillery *matériel*	14,170,500	(£566,820)
Engineer ,, ...	3,000,800	(£120,032)
Remount ,, ...	8,583,000	(£343,320)
Provisions, etc., and Quarters ...	11,950,920	(£478,037)
Camp *matériel*	1,680,000	(£67,200)
Military Hospitals	5,061,000	(£202,440)
Military Transport	7,287,500	(£291,500)
Miscellaneous Expenses	280,000	(£11,200)
Total	67,610,420	(£2,704,417)

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Turkey.

Personal.—It has been decided to create an Under Secretary of Stateship for War, and General Férik Pasha, Director of the Finance Section at the Ministry of War, has been selected to fill the post. He will have under his control all matters relating to the administration of the Army as well as the Finance Department.

At the end of October, 1909, eleven German officers, drawn from the Infantry, Cavalry, Field and Foot Artillery, were placed *à la disposition* and detailed for service as instructors in the Turkish Army, included in the number being 1 lieut.-colonel, 3 majors, and 7 captains. The number of German officers at present serving in the Army is 16, including General von der Goltz, as well as Imhof Pasha and von Ditfurth Pasha. Only a short time ago two German officers were sent to Constantinople, the one for duty with the Grand General Staff, the other to the Musketry School at Constantinople, of which he has since taken command. All the newly-appointed officers were recently presented to the Sultan by General von der Goltz, and His Majesty, after expressing his thanks to the instructors, concluded by hoping that their work would contribute more and more to strengthen the friendship existing between the two countries.

Reorganisation of the 1st Army Corps.—The 1st Army Corps (Constantinople) has been broken up as the result of the occupation of the capital by the Salonika Army, and is to be reconstituted as follows :—

Infantry.—The infantry will consist, as formerly, of two divisions (Nos. 1 and 2) of seventeen battalions each, including a battalion of Chasseurs

The units detached away from Constantinople before the events of last April (No. 2 Battalion of Chasseurs to the IIIrd Corps, Battalions 2/1

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and 4/3 to Smyrna, Battalions 1/7 and 3/8 to the Hedjaz) will remain in garrison where they are, in dependance on the 1st *Ordou*.

The remaining twenty-nine Battalions will be sent into barracks, for the most part outside the walls of the town.

Cavalry.—The *Erthogroul* Regiment is disbanded, as also Regiment No. 4.

The Cavalry of the 1st Corps will for the present only consist of four regiments (No. 6 Regiment remaining detached to the 3rd *Ordou*), bearing the Nos. 1, 2, 3, 5, of which two will be in barracks at Maslak in the neighbourhood of Constantinople, and two at the Sélimie Barracks at Scutari.

Artillery.—The six Artillery regiments will be re-formed as they existed before the events of April and sent into barracks: two at Taxim (Pera), two at Scutari, and two at Ramiz-Tchiflik (Stamboul). This reconstruction is at present in course of being carried into effect.

The officers' *personnel* remains as it was at the time of the events of the 13th April. The non-commissioned officers are being supplied from the non-commissioned officers and old soldiers drawn from the units of the Army of Occupation. The men are provided, one-half by young soldiers of the class of 1,325, who took no part in the rising, and the other half by Anatolian recruits of the class of 1,326, who have been called up in advance.

Regulations for Reserve Officers.—The Chamber of Deputies has voted the new law brought forward by the Minister of War for the constitution of the Corps of Officers of the Reserve.

It is intended to suppress gradually the permanent cadres of the Rédif units which, as is known, belong to the Active Army, and while doing but little service are a heavy burden on the Estimates.

The Corps of Reserve Officers will be constituted as follows:—

1. Officers of the Active Army placed on the retired list by the age limit, but who are still fit for active service;
2. Young men drawn from the annual contingent who have university diplomas and who satisfy other conditions which will be imposed.

As far as regards the latter class, the following regulations are laid down:—

Service in the Active Army is fixed at one year for graduates of the higher schools; two years for those of the middle-class schools; and three years for those from elementary schools.

Every university graduate is not obliged to become a Reserve officer; he is free to pass into the *Ihtiat* as a common soldier.

If he wishes to become a Reserve officer he must, after six months of service, pass an examination, when he will be appointed a corporal; and six months later a second examination, after which he is promoted to sergeant.

University graduates, who are candidates for Reserve officers, will thus all be sergeants at the end of their first year of service.

Those of the 1st category (the higher schools) will then during the next two years undergo an eight weeks' period of drill. After examination they will be appointed sergeant-majors at the end of the first period, and sub-lieutenants of the Reserve at the end of the second.

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Those of the 2nd category (the middle-class schools) will serve as sergeants during their second year of service, at the end of which they will pass for sergeant-major. During their third year they will complete an eight weeks' period of drill, at the end of which, after an examination, they will be appointed sub-lieutenants of the Reserve.

Those of the 3rd category (the elementary schools) will do their second year of service as sergeants and their third as sergeant-majors, and will also be appointed, after an examination at the completion of their term of service, sub-lieutenants of Reserve.

Candidates of all categories who fail to pass their examinations will pass into the Reserve as non-commissioned officers.

Adoption of Four-gun Batteries.—The Superior Council of War has decided on the adoption of four-gun batteries.

This measure, which was tried at the last manœuvres at Adrianople, where the batteries were constituted with four guns, will entail a complete reorganisation of the Artillery and a new distribution of the batteries in the regiments. The resulting necessary changes are at present being considered at the Ministry of War.—*Revue Militaire des Armées Etrangères.*

CORRESPONDENCE.

EXTEMPORISED SEMAPHORES.

To the Editor of the JOURNAL OF THE ROYAL UNITED SERVICE INSTITUTION.

SIR,—It may interest officers who are responsible for signaling, both in Regular and Territorial battalions, to know that by using bicycle chains and gear wheels it is easy to extemporise a mechanical semaphore.

Such a semaphore was made in the camp of the Lowland Divisional Engineers at Troon last year. It was fixed on the crow's-nest of a 45-ft. observatory, and was found to be exceedingly rapid and effective in transmitting messages.

The cost of its materials was less than £1.

The following are the articles made use of in its construction :—

One wooden post, 4 in. by 2 in., 13 ft. long.
Two wooden arms, 3 ft. 6 in. by 5 in.
One wooden indicator, 1 ft. 6 in. by 5 in.
Two pieces of broomstick for handles.
Four old bicycle gear wheels, with cranks attached.
Two axles, 5 in. long, to fit ditto.
Four old bicycle chains.
Two 6-in. rigging or straining screws.
One ¼-in. bolt for indicator.

Each crank had two holes drilled in it in the bicycle shop, to which the semaphore arms and manipulating handles were attached by ¼-in. bolts 2 in. long; number required, 8.

The corners of the post were bevelled off to prevent the chains catching, and two large nails were driven into the post, one on either side to prevent the handles making a complete revolution, and so jamming the chains.

This winter I have had made by a bicycle engineer a much smaller and improved pattern of semaphore. The post is 9 ft. high, and has been made jointed for easier transport. The manipulating handles can be clamped at various heights, and the instrument is a convenient size for company use. Its weight being only 14 lbs., it can be carried on a bicycle, and its cost is 30s.

It now appears feasible to make a portable set of arms, wheels, wires and chains which could be clamped on to a telegraph post or tree, thus making it possible on service or manœuvres to establish semaphore signaling stations by the roadside when telegraph posts are available.

These semaphores are not only cheap but very portable and also efficient. They add greatly to the interest of men learning signaling, and also accustom them to read mechanical semaphores which are so largely used in the Navy, thus paving the way for co-operation in signaling on service.

Such a semaphore could also be used from a trench or position under fire, when it would be quite impracticable to use flags, and if the handles are fixed low it might be worked by a man lying on his back. With flexible wire and pulleys, semaphores might be worked from a position to one flank, or even put up in trees, in order to screen them from the enemy's view.

A pair of semaphores would be found very useful on the range, one on the firing point and one, with a looking-glass attached, showing above the markers butt to one flank of the targets. Not only would this give men, who are not actually firing, practice in reading and sending, but it might also on small ranges enable telephones to be dispensed with. Of course, such messages as "Examine A 4," or "Last shot on B 1," would be sent in abbreviated code. It is in encouraging this use of abbreviated code that cheap mechanical semaphores promise to be of most value. Now that a knowledge of semaphore is so universal it is certain that in future campaigns visual signaling will often be the sole means of sending orders or information to troops in exposed positions.

When every barrack square and drill hall is equipped with a pair of mechanical semaphores a great impetus will be given to signaling.

The continual writing of messages and orders will be no longer necessary owing to the introduction of a working semaphore code book, printed on thin paper and containing every probable message connected with the handling of troops under fire, passing of information, supply of food and ammunition.

The compilation of such a book will need time and the co-operation of many writers to ensure that full advantage is taken of all the experience of warfare under varying conditions which is at the disposal of the British Army.

Yours faithfully,

F. S. Garwood, *Captain, R.E.*,

Adjutant, Lowland Divisional Engineers

Drill Hall, Rutherglen, N.B.

NAVAL AND MILITARY CALENDAR.

MAY, 1910.

2nd (M.) H.M.S. *Bacchante* paid off at Chatham

„ „ H.M.S. *Suffolk* paid off at Devonport.

3rd (T.) H.M.S. *Bacchante* recommissioned at Chatham for Mediterranean.

„ „ H.M.S. *Suffolk* recommissioned at Devonport for Mediterranean.

„ „ H.M.S. *St. Vincent* commissioned at Portsmouth for Home Fleet.

5th (Th.) 50th Anniversary of the Departure of Garibaldi with his 2,000 followers from Genoa for Sicily.

6th (F.) Death of His Majesty King Edward VII.

7th (Sat.) Proclamation of His Majesty King George V.

„ „ H.M.S. *Bacchante* left Chatham for Mediterranean.

„ „ H.M.S. *Suffolk* left Devonport for Mediterranean.

9th (M.) Public Proclamation of His Majesty King George V.

„ „ H.M.S. *Natal* paid off at Chatham.

10th (T.) H.M.S. *Natal* recommissioned at Chatham for Second Cruiser Squadron

11th (W) 50th Anniversary of Garibaldi's landing at Marsala (Sicily); he assumes the Dictatorship in the name of the King of Sardinia.

12th (Th.) 90th Anniversary of the birth of Miss Florence Nightingale.

15th (S.) 1860. Garibaldi defeats Neapolitan Army at Calatafimi.

16th (M.) H.M.S. *Donegal* paid off at Devonport.

17th (T.) Removal in State of the Remains of the Late King Edward VII. to Westminster Hall for the Lying in State.

„ „ H.M.S. *Donegal* recommissioned at Devonport for Fourth Cruiser Squadron.

19th (Th.) Lying in State of the Late King Edward concluded.

20th (F.) Funeral of His Late Majesty King Edward VII.

23rd (M.) H.M.S. *Lancaster* arrived at Sheerness from Mediterranean.

26th (Th.) Foundering of French Submarine *Pluviôse* off Calais with loss of 26 officers and men.

27th (F.) 1860. Garibaldi attacks and enters Palermo.

28th (Sat.) Palermo bombarded by Neapolitan Fleet.

29th (S.) 250th Anniversary of the re-establishment of the Monarchy and of Entry of Charles II. into London.

30th (M.) H.M.S. *Lancaster* paid off at Chatham.

31st (T.) 8th Anniversary of the Signing of the Treaty of Peace at Vereeniging (S.A.).

„ „ Proclamation of the Union of the Four South African British Colonies.

„ „ H.M.S. *Lancaster* recommissioned at Chatham for Sixth Cruiser Squadron in Mediterranean.

„ „ 1860. Armistice agreed to between Garibaldi and Neapolitan Generals.

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GERMANY.—*Militär-Wochenblatt.* Berlin: 3rd May, 1910.—"The Austrian Infantry Tactics in their Historical Development." "The Maxim and Hotchkiss Machine Guns." "Military Strength through Education." 5th May.—"The Centenary of the Establishment of the Saxon Train." "The Austrian Infantry Tactics in their Historical Development" (*continued*). "Once More, the Fighting Strength of Firing Lines." 7th May.—"The English Army Estimates for 1910-11." "The Austrian Infantry Tactics in their Historical Development" (*continued*). "The 25th Anniversary of the Foundation of the Russian Military Balloon Establishment." 12th May.—"Theodore Roosevelt." "The Attack with Ranks Closed Up." "Observations on the Organisation of the German Cavalry" (*concluded*). "Military-Technical Review." "The Systematic Promotion in the Art of Flying, a National Duty." 14th May.—"Dense and Thin Firing Lines." "On War-Historical Examples." "The Chinese Army." "The Commissariat of the French Soldier." "The New Organisation of the Russian Army." 19th May.—"Tactical Themes Founded on the War of 1864." "Field-Motors in the Manœuvres." "The New Regulations for the *Kapitulanten* and Instruction of Military Candidates of 26th April, 1909." 19th May.—"The New Army List of the Prussian Army and XIIIth (Würtemburg) Army Corps for 1910." 21st May.—"The Defence of Present Fixed Works during the Near Attack as the Result of the Lessons from Port Arthur." "The Conflict between Ecuador and Peru." 24th May.—"The Defence of Present Fixed Works during the Near Attack as the Result of the Lessons from Port Arthur" (*concluded*). "Observations on the Further Development of our Three Types of Airships." "Changes in the English Regulations for the Employment of Machine Guns." 26th May.—"Gymnastic Training." "Once More: Peasants on the Chessboard. II. The East Army" (*continued*). "Extension of the Front in Battle." "Something from the French Army." 28th May.—"Once More: Peasants on the Chessboard" (*concluded*). "The French Army" (*concluded*). "Prize Riding in Buenos Aires." 31st May.—"French Firing Experiments." "Military-Technical Review: Optics as a Help to Leading an Army" (*continued*). "Tactical Themes Founded on the War of 1864."

Artilleristische Monatshefte. Berlin: April, 1910.—"The Resistance to the Air of Projectiles, according to the Kinetic Theory of Gases."

"On the Shooting of the French Field Artillery." "The Employment of Field Artillery in Fortress War." "The Driving Training of the Field Artillery in the Spring." "Improvement in the Krupp Sight for Field Artillery." "Engel Air-Torpedo."

Jahrbücher für die Deutsche Armee und Marine. Berlin: May, 1910.—"Training for War." "Proficiency in Arms in Germany, France, Russia, and its Effects on Readiness for War." "A Word on Long-distance Rides." "Officers' Remuneration." "Experimental Contribution to the Knowledge of the Oscillating Movement of Projectiles." "Military Dentists for Army and Navy."

ITALY.—*Rivista di Artiglieria e di Genio.* Rome: February, 1910.—"The Surrender of Gaeta and the Significance of the Anniversary Festival of the Corps of Engineers." "On the Calculation of the Trajectory for the Allotment of Marks." "The Motor Car in the Army." "The Calculation of the Reciprocal Effects of the Fire of Opposing Batteries in Siege Practices" (*concluded*). "The Command of the Air and War." "Some Types of Anchors Exhibited in the Victoria and Albert Museum in London."

Rivista Militare Italiana. Rome: 16th April, 1910.—"Fortress Warfare" (*concluded*). "The Water System of the Region: Massowa-Asmara-Axum-Adigrat, etc." (*concluded*). "Character and Intelligence in the Functions of Military Command" (*concluded*). "Questions of Discipline and Command." "The Cottian Alps: A Descriptive Essay" (*continued*). "The Missions of Colonial Troops." "Military Medicine with regard to the Two Years' Service" (*concluded*). "The Cisleithan Landwehr in 1910." "The Two Years' Service in the Cavalry." "Maritime Strategic Geography and Coast Defence." "The Operations of Mukhtar Pasha in Asia Minor, according to the most Recent Views."

SPAIN.—*Revista Técnica de Infantería y Caballería.* Madrid: 15th April, 1910. — "Evolution of Military Law among Modern Nations." "Our Soldiers in the War of Independence." "The Infantry in the French Army." "The Grand Manœuvres in France and Germany." "The Cause of the End of the Russo-Japanese War."

Revista Científico-Militar Biblioteca Militar. Barcelona: 10th May, 1910.—"Lessons of the Riff War." "Duty of Courtesy." "New Orientation of the Instruction of the Troops." "A French Critic on the Riff Campaign." "New Conception of Military Learning."

SWITZERLAND.—*Revue Militaire Suisse.* Lausanne: May, 1910.—"The Brigade Manœuvres of the 1st Division in 1909" (*concluded*). "Electric Traction in time of War." "The March of Wagon Columns." "Description of the Mexican Automatic Rifle." "Tyres for Wheels."

UNITED STATES.—*Journal of the United States Infantry Association.* Washington: May, 1910.—"A Lesson from Manchuria." "Field Artillery in Co-operation with the other Arms." "The War Game for Garrisons and for Armory Schools." "Organisation and Training of a Second Line Regiment of Infantry." "The Training of Companies Depleted by Guard

and other Duties." "The Use of the Infantry Entrenching Tools." "The Straight Ration and the Fort Riley School." "Arming the Sergeant." "Civil Institutions and Military Instruction."

Journal of the U.S. Cavalry Association. Fort Leavenworth, Kansas: May, 1910.—"Condition Counts." "Purchasing and Training Horses for Military Service in France." "Future Supply of Horses for our Army." "Kilpatrick's Raid around Atlanta." "Training School for Saddlers." "Localisation of Regiments." "Field Service Regulations: A Course for Non-commissioned Officers." "Outbreak of September, 1879." "Wireless for the Cavalry." "Wireless with the Cavalry." "Making Generals: Tactical Study for Field Officers' Post Graduate Course."

NOTICES OF BOOKS.

Historical Records of the West Kent Militia, with some Account of the Earlier Defensive Levies in Kent. By Colonel T. Bonhote. London, 1909.

The old West Kent Militia, which bore that title from the year 1759 for one hundred and twenty-two years, and from 1881 to 1908 was styled "the 3rd and 4th Battalions of the Queen's Own Royal West Kent Regiment," has to thank Colonel John Bonhote, a former commanding officer, for a handsome and interesting record of its long and honourable career.

Colonel Bonhote, after serving in the 57th and 84th Regiments, joined the West Kent Militia in 1877, and, holding the belief that "he who careth not whence he came, careth little whither he goeth," lost no time in enquiring for the history of his new regiment. This he found to be non-existent. "No one knew anything about the regiment except that it had been embodied during the Crimean War, and that it was believed in a very vague way that it went to Ireland during the Irish Rebellion; but beyond that its deeds were wrapped in mystery, and its origin obscured in oblivion." Having thus an absolutely clear field of enquiry, the author set to work with much courage and enthusiasm, and after prolonged researches in the Record Office, the British Museum and in local archives, has succeeded in collecting and producing in a volume of some 500 pages a work which is not only a record of the West Kent Militia, but a history of considerable value of the defence forces of Kent from the days of King Alfred the Great downwards.

Such a work, undertaken in the right spirit, is sure to arouse interest wherever men of Kent are to be found; but we are mistaken if Colonel Bonhote's book will not attract the attention of a wider public, for there is much in it that should appeal to students of general history, to antiquarians, and to other classes of readers.

Among the more important episodes of Kentish history dealt with we find an interesting reference to the Battle of Hastings, in which the men of Kent, as was natural, took a leading though unfortunate part, and

exercised to the full their acknowledged right to strike the first blow for the defence of England. In a passage which depicts the bad as well as the good qualities of brave but weakly disciplined troops, we read that, even after the success of the Norman *ruse* of a feigned retreat, the English still stood firm. "Where the throng of the battle was greatest the men of Kent and Sussex fought wondrously well, and made the Normans again retreat; *but it was all in vain. No valour could regain the day which their imprudence had forfeited*"—so the Militia of Kent fell, fighting to the last, around their dying King.

In 1588, when England was next seriously threatened with invasion, we find Kent well to the fore with her preparations, offering no less than 12,654 men for the expected death struggle. Nearly a third of these were unarmed, so sudden was the call, but all were ready, and few there were in the brave days of old who had no knowledge of arms.

Rations, we may note, were on a liberal scale in the spacious days of Elizabeth, the humble foot soldier drawing daily two and a half pounds of meat, a pound and a half of bread, a pound of cheese, two quarts of beer, a quart of wine, and a pound of biscuit, while the horseman's allowances, both of food and drink, were much larger. Our rude forefathers were terrible trenchermen.

We would gladly follow Colonel Bonhote at much greater length through his long story of the men of Kent and their services to England, but these brief extracts may suffice to indicate the varied character of the fare which he sets before his readers. Suffice it to say that he so relates the history of the West Kent Militia, that many will regret with him the disappearance from the defence organisation of the Empire of "the old Constitutional Force." With justifiable pride, Colonel Bonhote quotes the words of King Edward on 21st February, 1908, when His Majesty thus thanked the Militia for its services: "I take the opportunity," wrote our lamented ruler, "of expressing to the Force my keen appreciation of its services in the past. In peace and in war the Militia has never been asked in vain to make sacrifices for the good of the country."

It remains only to add that the "Records" are written in a restrained yet vivid style, and that the volume, which has been published by subscription, is handsomely printed and bound and lavishly illustrated, many of the earlier pictures being of considerable merit and interest.

Column and Line in the Peninsular War. By Professor C. W. C. Oman. Pamp., 22 pp. Frowde, London. Price, 1s.

Who of us, however old he may be, did not welcome in an Examination Paper a question on the relative merits of line and column? We knew all about it, for we had been thoroughly "primed" beforehand, and in a dozen lines, at most, we polished off the subject, receiving from the Examiner, equally "primed," full marks. It is a kindly dispensation of Providence that an Examiner occasionally knows as little of the subject he is examining about as do his victims, the examinees. In this most interesting pamphlet we now learn what "Line and Column" really meant. It is a most valuable contribution to the knowledge of the

Wellington Tactics, and its perusal shows us that "Line and Column" was in former times a sort of "stock" and welcome question in Examinations owing to our innocent ignorance.

The Book of the Army Pageant. Edited and arranged by F. R. Benson and A. Tudor Craig. London: Causton & Sons. Price 2s. 6d.

The Directors of the Army Pageant are to be heartily congratulated on the issue of the book before us, which most appropriately made its appearance before the public on Empire Day, while a full meed of credit must be accorded to the Editors for the great care with which this excellent work has been compiled. It will not only prove invaluable to those attending the Pageant, but should prove useful as a work of reference in regard to the evolution of arms, armour, and numerous stirring battles in the military history of this country. Among the contributors will be found many well-known names, while the book is beautifully illustrated, the reproduction of the Wellington commemorative medal and of the thirteen miniatures of his principal victories, being really excellent.

The Pageant is being held in aid of the funds of the Soldiers' and Sailors' Help Society, the work and object of which is clearly explained in an excellent little opening chapter by Princess Christian, the President of the Society, which is followed by a brief foreword from the pen of Field-Marshal Earl Roberts. His Lordship points out "that the promoters of this Pageant have striven for a high ideal, and that it has not been organised merely as a popular show. Their idea has evidently been to instil a sense of patriotism into the minds of the people, and to impress upon them that it is the duty of every member of our great Empire to endeavour to do something, however small, for the good of their country. . . . And I earnestly hope that all those who are fortunate enough to see this Pageant will realise the lesson it is intended to convey." Mr. Benson, the Master of the Pageant, contributes some interesting introductory remarks; then follow short explanatory commentaries, in which the evolution of weapons through the Gaels, Ivernians, Scots, etc., is shown; "the Coming of the Disciplined Man" with the Romans, and the "Dedication of the Boy to the Service of his Race in Peace and War." After this come descriptions of the ten episodes that are presented with commentaries and notes; these include among others, Badon, Hastings, Crécy, Agincourt, Joan of Arc on the Field of Patay, Naseby, etc.

Part II. consists of stories of the regiments in famous fights, with commentaries and notes, which include such battles as Malplaquet, Dettingen, Minden, etc., while the Pageant concludes with a Grand Finale illustrating the motto "Service is Power."

A list of authorities and an excellent index completes this valuable little work, which will be almost indispensable to those who visit the Pageant, and will be equally interesting to the many who will be unable to attend and who by its purchase will be doing something to aid the funds of the Society on whose behalf the Pageant is being held. It may be as well to remind our readers that the Pageant will be held in the grounds of Fulham Palace by the kind permission of the Bishop of London, from the 20th of the present month to the 2nd July.

PRINCIPAL ADDITIONS TO LIBRARY DURING MAY, 1910.

Commodore John Rodgers, Captain, Commodore, and Senior Officer of the American Navy, 1773-1838. By CHARLES OSCAR PAULLIN. 8vo. 20s (Arthur H. Clark Company.) Cleveland, 1910.

Les Pseudo-Tendances Nouvelles de l'Armée Allemande. By General H. BONNAL. 8vo. 1s. 3d. (R. Chapelot et Cie.) Paris, 1904.

The Cradle of New France. By A. G. DOUGHTY. Crown 8vo. 7s. 6d. (Cambridge Corporation, Ltd.) Montreal, 1908.

Finance and War. By Captain R. S. HAMILTON-GRACE, 13th Hussars. 8vo. 2s. 6d. (Presented.) (Hugh Rees, Ltd.) London, 1910.

Column and Line in the Peninsular War. By Professor C. W. C. OMAN. 8vo. (Presented.) (Oxford University Press.) Oxford, 1910.

Letters, Newspaper Cuttings, Photographs, etc., relating to the Late Lieutenant William Geoffrey Plantagenet Graves, R.N., and the Loss of H.M.S. "Gladiator." Imp. 4to. (Presented.) n.p., n.d.

Unsere Kavallerie im Nächsten Kriege. By Major-General FREIHERR VON BERNHARDI. 2nd enlarged and revised edition. Royal 8vo. 5s. (E. S. Mittler & Sohn.) Berlin, 1903.

A Royal Cavalier—The Romance of Rupert, Prince Palatine. By Mrs. STEUART ERSKINE. 8vo. 15s. (Eveleigh Nash.) London, 1910.

A Précis of Strategy. By Brevet Lieut.-Colonel W. D. BIRD. 8vo. 3s. 6d. (Presented.) (Messrs. Hugh Rees, Ltd.) London, 1910.

Turenne en Elsace—Campagne de 1674-1675. By Le Général LEGRAND-GIRARDE. 8vo. 2s. 6d (Berger-Levrault et Cie.) Paris, 1910.

Reiterdienst. By General FREIHERR VON BERNHARDI. 8vo. 7s. 9d. (E. S. Mittler & Sohn.) Berlin, 1910.

The British Empire. By Rt. Hon. Sir CHARLES W. DILKE, M.P. Crown 8vo. (Presented.) London, 1910.

Maps and Map-Making. By E. A. REEVES. 8vo. 8s. (Royal Geographical Society.) London, 1910.

The American Civil War. By JOHN FORMBY. With 1 vol. maps. 8vo. 18s. (John Murray.) London, 1910.

The History of the Confederate War. 2 vols. By G. C. EGGLESTON. 8vo. 15s. (William Heinemann.) London, 1910.

RECENT PUBLICATIONS OF MILITARY INTEREST.

COMPILED BY THE GENERAL STAFF, WAR OFFICE.

APRIL, 1910. PUBLISHED QUARTERLY.

Communicated by the General Staff and reprinted by permission of the Controller of His Majesty's Stationery Office.

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PREFATORY NOTE.

This Pamphlet will be issued quarterly, in April, July, October and January. Its purpose is to draw the attention of Officers to British and Foreign publications of Military interest which are likely to assist them in their professional work. Copies of the pamphlet will be distributed to the Headquarters of Commands, Educational Establishments, Units and Reference Libraries.

PART II.*

SECTION I.

NOTE.—1. *When the price is not given in part II., Section I., it is not known.*
2. *In Part II., Section I., books whose titles are given in foreign languages as well as in English are published in those languages, and are not translated.*

POLITICAL.

The Treaty of Frankfort (Le Traité de Francfort). By Gaston-May. 328 pp. 8vo. Paris, 1909. Berger-Levrault. 5/-.

This is a study, from the point of view of international law, of the various treaties and conventions which were necessary to bring the war of 1870-71, in the diplomatic sense, to an end.

After a preliminary discussion, the author examines the armistice of 28th January, 1871, and argues that the German demand of a ransom of £8,000,000 from the town of Paris was contrary to international usage. Then follows a study of the preliminary treaty of Versailles, which was followed by prolonged negotiations at Brussels. The frightful confusion in France and the Commune absorbed the energies of the French statesmen, and Bismarck took full advantage of the circumstances to drive a hard bargain.

The Frankfort treaty is next discussed, and Professor Gaston-May points out that with a little more liberality and moderation the Germans might have made this treaty an effective bond of peace. The annexation of Alsace-Lorraine he thinks, can only be justified by a German fear of French aggression.

There is much interest in the chapters dealing with the war indemnity and the German occupation, which cost France at first some £50,000 a day. It was only by the mutual good-will and moderation of General Manteuffel and the Comte de Saint-Vallier that this military occupation did not cause greater difficulties.

Altogether this book is full of interest for those wishing to study the complicated legal, financial, and diplomatic questions arising out of a great war. Each chapter is followed by a good bibliography.

* The titles of all books are given in English; this does not indicate that the books have been translated. The original title in the language in which a work is written, if not in English, is given in brackets.

The Valour of Ignorance. By Homer Lea. 344 pp., with portrait and map. 8vo. New York, 1909. Harper. 7/6.

This work deals with world forces and the very humble part the United States are destined to play amongst them, if they do not quickly awaken to a sense of their present state of military helplessness. The book is divided into two parts, the first of which is in the nature of a philosophical study of the causes which lead to the rise and fall of nations. The author in this part devotes himself to showing that national greatness is inseparable from military progress, and that, where wealth and luxury are allowed to sap the military strength of a people, the time for its downfall draws near. The second part is the application of these ideas to the concrete case of war between the United States and Japan for the mastery of the Pacific.

Some of the language employed may appear somewhat extravagant; but, in spite of this, the book is one which it would be well for every Englishman to read; he can then consider to what extent the warning here conveyed to the United States might not equally well be addressed to his own country.

It has been stated in some periodicals that the author is a general; this is not the case, he has never served in the army or militia.

Boundary Treaties in connection with French Africa (Traités de délimitation concernant l'Afrique française). By Professor E. Rouard de Card. 192 pp., with 17 maps. 8vo. Paris, 1910. A. Pedone. 8/6.

As the author of this volume points out, France has now fixed by treaty the various frontiers of her African Colonies, with the exception of the Algero-Morocco and Tunisia-Tripoli boundaries.

The book gives a general review, and the text of the treaties between France and the following countries:—Germany, Belgium, Spain, Congo Free State, Abyssinia, England, Italy, Liberia, Marocco, and Portugal. It is therefore a useful compilation to all interested in African questions.

Contemporary France. By G. Hanotaux, translated by E. Sparvel-Bayly. Volume 4. 639 pp. 8vo. London, 1909. Constable & Co. 15/-.

The fourth volume of this excellent translation of Hanotaux's book deals with the period from 1877 to 1882. The chief figures are Gambetta and Bismarck. The latter seems to have hypnotised the author, who sees his diabolical cunning in every diplomatic move. The period is interesting, as it embraces the Berlin Congress and the occupation of Egypt by Great Britain.

TRAINING AND EDUCATION.

The Soldier and His Marksmanship on the Field of Battle (Le Tireur du Champ de Bataille). By Lieutenant Bally. 181 pp. 8vo. Paris, 1909. Berger-Levrault. 2/-.

This study is divided into three parts, all referring to the character of the soldier, his preparation for war, and his conduct under fire. The author, who quotes freely from others, sets himself the task of investigating the psychological aspect of the modern soldier when under fire, and how to counteract certain of his failings—failings which, inherent in all human beings, tend to nullify his usefulness as a fighting machine. A number of thrilling incidents in the Franco-Prussian, South African, and Russo-Japanese Wars are vividly described. These place before the reader various scenes on many battle-fields in many lands, and show that the *moral* of all is always the same, and that "human nature is ever weak." Lieutenant Bally concludes with the warning: "The marksman on the range is by no means identical with the same individual on the field of battle. Let him be trained accordingly."

Russian Cavalry Training (Устав Строевой Кавалерийской Службы). Vol I (Part I), 269 pp., 1909; Vol. II (Parts II, III, IV, &c.), 335 pp., with diagrams. 8vo. St. Petersburg, 1907. Berizovski. 3/2.

This is merely a reprint of the Cavalry Training of 1902. Part I. deals with individual, squad, and foot training, the fitting of saddlery and the harnessing of cavalry horses to guns; Part II. treats of squadron training; Part III. of regiment training; Part IV. of brigade, division, and corps training. The second volume also contains regulations for dismounted work and ceremonial, and a list of trumpet calls.

Both volumes contain as appendices extracts from circular orders relating to cavalry training issued from time to time by the Inspector-General of Cavalry. Volume II., however, contains no orders issued since the late war.

Are we ready for War? (Sind wir kriegsfertig?) By Major Hoppenstedt. 234 pp. 8vo. Berlin, 1910. Mittler. 4/-.

In this work the well-known author discusses various military questions in the form of a diary. The opening pages are devoted to a consideration of the use of military studies in general, and of military history in particular. Napoleon's words, that in studying campaigns the why and the wherefore must be sought for, are quoted. Warnings are uttered against superficial study of campaigns, generalising from single events, and disregarding factors such as surprises, outside influences, personal relations, &c. Passing on to the Jena campaign, which is discussed "from the Mene Tekel standpoint," the author gives its tactical and strategical outlines,

quotes from narratives of participants, and adds extracts from various documents to illustrate the lamentable state of the Prussian Army on the eve of the campaign. The regeneration period of Prussia's forces, between 1807 and 1813, is examined by allusions to the three leading personalities, Gneisenau, Yorck, and Scharnhorst, whose writings are quoted. The main tactical and strategical features of the wars of 1813-1815 are discussed and criticized. Commenting on a correspondence between Blücher and Yorck, in which the latter is blamed by Blücher for slowness in pursuit, the author points out that defective orders were partly responsible, and adds, "even the projects of genius do not produce successful results without schooling and experience (of staffs)." A description of the pursuit after Waterloo is followed by a discussion of Blücher's career and character. Reflections follow on Napoleonic methods of warfare and on the operations of modern "mass-armies." The author quotes a saying that every officer should have an insight into the complicated mechanism of big armies, and adds that this requires careful study of military history combined with power of imagination. He reproduces in outline, and discusses a study by General von Falkenhausen dealing with the strategic deployment and initial action of mass-armies facing each other on the Franco-German frontier. Noteworthy is the conclusion that mountainous country is ill-suited to enveloping tactics of large bodies of troops, as they (especially the artillery) cannot make their influence felt. The opinion expressed by the author that a war of revenge offers no prospects of success for France, is also of considerable interest. "Mass-armies" in general are held to necessitate a return to "rougher" tactical methods, owing to want of deploying space and difficulties of subsistence. Regarding marches the author estimates a loss of from 8 to 12 per cent. due to falling out at the outset of a campaign. To prevent this he proposes: removal of boots during railway journeys; doubling drill at halting places; massage; preliminary enquiries into marching capacities of reservists (bad marchers to be relegated to fortress troops) and occasional severe tests in peace time. The depth of marching columns must, he maintains, be diminished; reconnoitrers must report when troops can march off the roads; advanced parties must prepare and indicate routes for advances on broad fronts, and mark crossings over water, &c.

Examples are given to show the capabilities of close billets. The following is worthy of note:—"What about the inhabitants?" he asks. "There must be no nonsense about humane dealing where so much is at stake; the smallest space must suffice for them." *Of subsistence* he says: "Two grand inventions are field kitchens and motor vehicles; 550 motors with 2,200 men now accomplish what 4,050 vehicles and 4,900 men did before."

Succeeding pages are devoted to physical fitness, the Prussian parade step, manual exercises, garrison duties, saluting, and theoretical instruction of soldiers. The author considers guard duties of value as awakening a sense of responsibility. The influence of strict ceremonial drill on *moral* is happily illustrated. The remarks on individual bayonet fighting contain a warning against undue vigour in the assault entailing a loss of control. After a plea for more variety in garrison training grounds, wood fighting is considered, and examples are given and extracts quoted from the writings of an officer who fought at Wörth. The author quotes and endorses the opinion of several well-known writers, that colours should accompany a unit into the field and be placed well forward in action. He advocates practice in the rapid assembly of improvised units, instead of marching complete units on markers.

Other sections deal with the Russo-Japanese War, co-operation of the three arms and night operations. (Instructions issued by Sir J. French regarding the last named are quoted verbatim.) The author suggests that at field exercises, on a signal from the directing authority or by order of an umpire, a flag should be hoisted on a position to indicate that it is under artillery fire; further, that some indication regarding the nature of the (imaginary) projectile used and the tactical situation of the artillery should be given where possible. A picture illustrates entrenching by skirmishers during an attack. The use by attacking infantry of sandbags (*a*) as screens from view, (*b*) as cover from fire, is also discussed. The author advocates constant practice for infantry in destroying wire entanglements.

A passage dealing with "Training for action" pleads for practice in fighting at close ranges, greater depth (*i.e.*, smaller frontages) at peace manœuvres and training of officers and non-commissioned officers in close reconnaissance.

Practice with Machine-guns (Das Schiessverfahren mit Maschinengewehren). By Oberleutnant Kretzschmar of the German Army. 56 pp. 12mo. Oldenburg, 1910. Stalling. 9d.

This book contains instructions, drawn from the author's own experience, for the practical application of the teaching of the German regulations for machine-gun companies. The first chapter deals with ranging. The author considers that ranging, before opening fire for effect, is necessary against targets such as lines of skirmishers lying down, machine-guns, and artillery in action; that it is possible against lines of skirmishers in movement; and impossible or unnecessary at targets which can disappear if fire is turned on them, or which are near enough to make ranging superfluous.

The methods of ranging may be either (1) with all six machine-guns on one point; or (2) by sections on three different points; or (3) by single guns on six different points. Twenty-five rounds of continuous fire are fired from each machine-gun for ranging, so that the first method gives 150 rounds directed on the same point, thus facilitating observation of fire. If the nature of the ground makes observation difficult, the number of ranging rounds may be increased from 25 to 50, or even 100.

Machine-gun companies are equipped with the Hahn range-finder; the writer recommends that the most intelligent men of the company should be trained in its use: the range will then be known approximately before fire is opened. As a rule only one range is given to all six guns. The company commander must learn to judge whether the bullets are falling 50 or 100 yards short of the target.

The second chapter deals with fire for effect, the author thinks that when the range has been found an increase of 50 yards should be given before commencing fire for effect, so as to allow for the bullets falling short; he has found that they always do so after a short period of continuous fire.

A great difficulty in firing at targets such as long lines of skirmishers is, in the author's opinion, the traversing of the gun so as to distribute fire evenly over the target. He considers that the tendency is to "sweep" too fast and to fail to take account of irregularities of the ground. He recommends teaching the first-year conscripts in the following manner:—A line of heads-and-shoulders is put up at about 800 yards; the gun-layer commences from a flank and fires 15 to 25 rounds of continuous fire at the three flank dummies; a short pause is then made and the next three dummies are attacked in the same way, and so on; the length of the pauses between the series of 15 to 25 rounds is gradually reduced till the man learns to fire continuously while "sweeping" thoroughly and systematically. He reckons that by this method each gun fires about one belt per minute, and he considers that quite fast enough for instructional purposes.

In Lieutenant Kretzschmar's experience the distribution of fire over the target requires careful practice. It is not possible under service conditions to pass down words of command for the division of the target into sections; the machine-gun captains and gun-layers must therefore learn to pick out their sixth part of the target themselves.

The third chapter deals with indirect fire, illustrated by several examples. The fourth chapter discusses fire control, and the fifth suggests methods of preventing clouds of steam from the water-jacket from betraying the position of the machine-guns. Machine-gun companies are equipped with tubes by which the steam can be conveyed into a kettle full of water, or else into a hole dug in the ground; the author recommends burying the ends of the tubes in the first instance, and only using the kettle of water if that method fails.

The book concludes with an appendix containing a list of problems which might present themselves to an officer in charge of machine-guns in the field.

French Army Manœuvres of 1909 (Les Manœuvres du Bourbonnais en 1909). By Marty Lavauzelle. 142 pp., with map. 8vo. Paris, 1909. Lavauzelle.

This gives an excellent account of the French manœuvres of 1909, and is worth reading on account of the copies of the orders issued by the two corps commanders concerned. There is also a clear explanation of the system of supply.

Service in the Field in the German Army (Service en campagne dans l'Armée Allemande). By General Silvestre. 68 pp. 8vo. Paris and Nancy, 1909. Berger-Levrault. 1/-.

This pamphlet contains observations on the German Manœuvre and Field Service Regulations of 1908, and compares the principles in them with those contained in the French manuals.

Night Operations of Infantry (Nachtübungen der Infanterie). By Major von Krafft. 51 pp. 12mo. Oldenburg, 1909. Gerhard Stalling. -/10.

This is the 4th edition of this little book, it has been revised on account of the recent amendments to the Infantry Drill Regulations, which attribute greater importance to night operations than heretofore. The author deals with the training of the individual, the training of the group and section, the training of the company, and finally with the training of large formations.

As regards the individual, the author lays great stress on accustoming the eye to recognise objects in the dark, and the ear to distinguish between sounds. The man must also be carefully trained in marching over rough ground, keeping absolute silence and in securing his accoutrements so as to avoid rattling. He must also be instructed in taking up his direction of movement by the map or a sketch, by the moon, pole star, or compass. As regards the group or section the necessity to practise the occupation of piquet and sentry posts by night is pointed out; also marching at night and movements in open order. In the last case the section commander leads in the centre covered by a responsible non-commissioned officer with whom touch is kept.

The company should be practised in the occupation and breaking up of bivouac in the dark, in marching, and in the general principles of night fighting, and higher formations in marches and in night attacks and defence.

The New Manœuvre Regulations for the Spanish Infantry (Le Nouveau Règlement de Manœuvres de l'Infanterie espagnol). By Major Painvin, of the French War Office. Republished from "La Revue d'Infanterie." 101 pp. 8vo. Paris, 1909. Charles Lavauzelle. 1/-.

This book is a good translation of the 3rd edition of the new Spanish Field Service Regulations, published in 1909. It is divided into an introduction, two chapters and an appendix. The introduction deals with the training of the infantry soldier, from the elementary instruction of the individual up to brigade training. In the two chapters the general principles to be observed in battle are first dealt with, then the application of those principles as regards infantry: the procedure to be observed as regards the replenishing of ammunition is contained in an Appendix.

These regulations show a great advance on any previously published by the Spanish General Staff, and are thoroughly abreast of the modern development of

military thought. The lessons to be learnt from the South African and Manchurian campaigns have evidently been given full weight. Although the traces of German influence are evident, there is no slavish imitation of German methods; in fact, with the exception of the paragraphs dealing with the employment of the general reserve and with night operations, it is interesting to notice that the principles contained in the book resemble more or less closely those embodied in the British Field Service Regulations.

The Italian Musketry Regulations (Istruzione sulle armi e sul tiro). Official. 179 pp. 12mo. Rome, 1909. Voghera. 1/1.

These regulations replace those published in 1906, and are, like them, divided into an introduction and two parts. In the introduction it is stated that musketry instruction is to be considered one of the most essential parts of a soldier's training for war; it is not sufficient to produce individual marksmen, fire discipline and control must be assiduously practised in order to make the best use of collective fire.

Part I. contains a short non-technical description of the rifle (1891 Mannlicher model) and of the targets; considerable alteration has been made in the latter. The figure targets now consist of dark blue figures on a khaki ground, instead of black figures on a white ground; in addition, each figure has a white bull's-eye (30 centimetres in diameter) in the centre of the figure, with two additional concentric lines for "inners" and "outers"; the targets are, in fact, a combination of the "figure" and "bull's-eye" system; they are approximately the same size as those used in the British service.

Part II. deals with the preliminary instruction for and the carrying out of the annual course of musketry.

The following are the most noteworthy points:—

—	1906.	1909.
(1) Recruit's Course	72 rounds at 100-300 metres ...	72 rounds at 100-200 metres.
Classification Course	66 " 200-500 " ...	66 " 300-450 metres.
Collective Course	48 " 400-1,200 metres	60 " 450-1,000 metres.
Rifle Meeting	Details left to Commanding Officers.	
Field Firing	Nil	Number of rounds left to local authority. To be carried out with artillery if possible.

(2) 54 out of the 66 classification rounds are fired at 300 yards, the practices being varied by employing falling or disappearing targets and by increasing the rapidity of fire.

(3) 36 rounds only of the recruits' course are fired at a plain "bull's-eye" target as against 70 rounds in 1906. Outside the recruits' course only 6 rounds are fired at a plain "bull's-eye," the remainder at a combined "figure and bull's-eye" target.

(4) The rapidity of fire is raised from 6 shots per minute in some of the practices in the recruits' course to 12 rounds in 90 seconds in some of the practices in the classification course.

(5) The number of rounds allotted for the annual course is increased from 135 to 160; for the winter practice the number is raised from 36 to 54, a total increase of 43 rounds.

Part III. is concerned with judging distance, the importance of which is very strongly emphasised. Practice is to be carried on all the year round; two judging-distance meetings are to take place annually in each battalion; a prize grant of 8/- per company is to be given annually by the Government; all candidates for promotion to corporal are to submit their judging-distance records to the promotion board, who are to take them into consideration.

Provisional regulations for the tactical instruction of infantry machine-gun sections armed with the "Hotchkiss" gun (Reglamento provisional para la instruccion táctica de las secciones de ametralladoras de infanteria, dotadas con material Hotchkiss). Spanish General Staff. 60 pp. 8vo. Madrid, 1909. 1/-.

This hand-book is divided into an introduction and two parts. The introduction deals with the general principles to be followed: the first part with the organisation, drill, and working of the machine-gun section; the second part with its tactical employment.

The Spanish army has recently organized its machine guns in six groups (one group being composed of two sections each of two guns), which are allotted to 6 selected infantry brigades.

In view of the differences of opinion existing as to the proper method of employing machine guns, the regulations are of considerable interest.

The following are the chief points emphasised. (1) The importance of thoroughly training all the men of the section in the mechanism of the gun, in fire discipline, in judging distance, and in observing fire. (2) Each group is usually to take its orders from the General Officer Commanding the Infantry Brigade. (3) Guns to be invariably worked in pairs, a distance of 20 yards being generally left between them. (4) Guns are to be regarded as a comparatively short-range weapon, not as a

substitute for artillery. (5) The hostile infantry is to be regarded as the proper objective: duels with hostile machine guns to be avoided. (6) Surprise is to be regarded as the machine gun's most potent auxiliary.

A translation of this hand-book into French, by Major Painvin, appears in the November number of "La Revue d'Infanterie."

On Varied Ground (En Terrains Variés). By Lieutenant Chevron. 72 pp. Small 8vo. Paris, 1908. Chapelot. -/6.

The chief merit of this little book is perhaps its compactness. It contains a complete summary of the French infantry training manual, but nothing that is not fully dealt with in either our own Infantry Training or Combined Training Manuals.

A few suggestions for the instruction of an Infantry Regiment (Quelques idées sur l'instruction d'un régiment d'infanterie). By Lieutenant-Colonel de Fonclare. 231 pp. 8vo. Paris, 1909. Chapelot. 3/-.

This book enters into far deeper questions of tactics than the title might lead one to expect. The actual instruction of the men is hardly touched upon, but tactics as applied by officers are exhaustively dealt with. Like all modern French military writers, Colonel de Fonclare lays great stress on the high *moral* which should be ingrained in the men themselves. He considers it to be the only means of obtaining the stupendous effort which infantry will be called upon to make during the final stages of a modern attack. To emphasize this fact the Colonel quotes the first stages of the South African War, when our infantry, unable to locate the enemy, lay low, unable to advance; the Japanese, on the other hand, according to the Colonel, adhered to the orders issued by General Oku: "Infantry must press forward at any sacrifice. The secret of victory lies in the courage, the energy, the love of fighting, and the persistence which troops display in struggling to attain their objective until it be secured."

Colonel de Fonclare advocates the attachment of mounted scouts to infantry regiments. They proved of great value to the Russians in Manchuria. As their principal duty, however, would be the carrying of messages, cyclists might be equally well, or even better fitted for this task.

The necessity for telephones on the field of battle is emphasized, as signalling is in many cases too cumbersome and too slow.

In the Manchurian War the Japanese found it necessary to connect the firing line with their artillery by telephone. The author favours the recommendation of Generals de Négrier and Kessler, as to the necessity of flanking and enveloping movements carried out in long thin lines, as opposed to the opinion of General Langlois, who considers such lines to be too weak.

Finally the Colonel demands unity of purpose and of doctrines for the three arms, so that, being thoroughly well acquainted with each other's tactical methods, they will be in a position to render each other effective help on the field of battle.

STRATEGICAL AND TACTICAL.

India in Imperial Defence. A lecture by Captain D. I. Macaulay. 23 pp. 8vo. London, 1910. Central Asian Society.

The lecturer begins his subject by a survey of Indian military policy with regard to the great Asiatic Powers. These comprise Russia, Afghanistan, China, Persia, Turkey and Japan, and the peculiar circumstances of each and the manner in which these act and react upon one another are succinctly described and discussed.

Attention is drawn to the influence on Indian defence exerted by the rise of the German Navy combined with the disappearance of Russian naval forces from the Pacific, and the lecturer proceeds to take a wide and comprehensive view of the entire naval situation in the East.

Upon the deductions drawn from this survey he bases his recommendations as to the policy best calculated to safeguard British interests in Asia.

Briefly stated, Captain Macaulay's proposals are:—(1) India should assume complete responsibility for the defence of Colombo and Singapore. (2) The East India and China squadrons should be definitely incorporated as one fleet. (3) Port Darwin should be fortified and made an alternative base of Sydney for the Australian fleet unit so as to bring the latter into touch with the Singapore system. (4) India should take over the maintenance of the East India and China fleet units. (5) The self-governing parts of the Empire should consider the question of constructing at least four *Dreadnought* battleships to be eventually handed over to the Indian fleet; and (6) the expenditure for this purpose should be met by a loan, the sinking fund and interest charges to be met by the self-governing nations on a fixed basis.

The lecturer concludes with a criticism of the results attained by the Defence Conference of 1909.

The Infantry Machine Gun, its History and Tactical Employment (La Mitrailleuse d'infanterie, son histoire, son emploi tactique). By Captain Mairetet. 100 pp., with illustration. 8vo. Paris, 1909. Chapelot. 2/-.

This book is an able summary of the history of machine guns from the time of their first appearance in the American War of Secession, until quite recent times. When the machine gun was first discussed, its powers were naturally enough

exaggerated, for it seemed that this new weapon with its incredibly rapid fire could even challenge artillery in the open and perhaps drive it to non-effective range. In 1862, the machine gun did not really play a part worth serious study or comment; it was only used by the Federals, who thought with its help to make up in a measure for their lack of men.

It was not till 1870 that the machine gun played a prominent part on the field of battle. The French and the Germans, both armed with the new weapon, laboured under the same disadvantages. Neither of them were familiar with either the mechanism or employment of their respective mitrailleuses. In both armies the *matériel* was so heavy that it closely resembled artillery and was therefore unable to follow infantry with ease.

The German machine-gun was not ready at the beginning of the war, and did not arrive on the scene till the month of September, when one battery of six guns, employed by the Bavarians, made its appearance and was employed during the remainder of the campaign.

The French, unaware even of the effective range of their own mitrailleuses, in the early stages opposed them to the enemy's artillery with disastrous results, as it was found their range did not in reality exceed 1,800 metres; the German guns consequently, posted at an average range of 2,500 metres, made short work of them as they moved into action. This happened both at Wörth and at Spicheren. On the other hand, whenever the mitrailleuses could be brought to bear either on artillery or infantry whilst they themselves were protected from shell fire, they were able to inflict serious losses. This was the case at the battle of St. Privat where the line of batteries of the IXth German Corps was taken in flank by the fire of a brigade of infantry and a battery of mitrailleuses. In a few minutes the Germans were silenced and compelled to retire with heavy loss, abandoning several guns.

Another factor to the disadvantage of the new weapon was the frequency with which, at critical moments, it jammed or its mechanism broke down.

The German reports state that whenever infantry was surprised by the mitrailleuses they were decimated; but, on the other hand, owing to the narrowness of the field of dispersion of the projectiles, it was often possible to avoid their effect by a slight flank movement.

Later in the war the French learned how to handle their machine-gun batteries to greater advantage. At the battle of Châtillon they were employed in co-operation with artillery and compelled the German batteries to withdraw to extreme range. At the battle of Le Mans some Gatling guns, protected from the enemy's artillery, successfully defended the bridge over the Huisne, and in the trenches afforded valuable assistance to the infantry in repelling the German attack on the centre. At the battle of Coulmiers the Germans made splendid use of their newly arrived machine-guns. In covering a difficult retreat they succeeded three times in completely checking the advance of numerous French columns launched in pursuit.

Captain Mairetet concludes that the main lessons to be drawn from the War of 1870 with regard to the employment of machine-guns are: (1) The necessity of a thorough study of the guns themselves before handing them over to troops. (2) The necessity of making both commanders and troops thoroughly acquainted with the use of the *matériel* they will have to employ in war. Little result can be expected from machine guns entrusted to the tender mercies of hastily improvised or insufficiently trained troops, *e.g.*, militia and similar levies. (3) Weapons using infantry ammunition can in no case enter upon a duel with artillery owing to their shorter range. (4) Machine guns in 1870, even on the German side, were only fought defensively. They were too heavy and offered too large a target to act on the offensive with infantry. (5) They produced a great moral effect.

After the war the question of machine guns was thoroughly investigated, and it was concluded that, owing to their cumbersomeness, they should no longer be employed with an army in the field. It was also virtually decided that their use should, in future, be confined to the defence of fortified places.

Notwithstanding the unfavourable verdict in both Germany and France, the Gatling gun was employed with good effect by the Russians at Plevna and by the English in Egypt in 1882.

The lessons of the war of 1870, however, still continued to be regarded as conclusive. A little later a revolution occurred in all established theories when the machine gun with a single barrel was invented, enabling weapons and material of a much lighter and more portable nature to be manufactured.

The author investigates the merits of the various better known machine guns with the greatest care. He is of opinion that the Hotchkiss is a superior weapon to the Maxim owing to its greater simplicity, and believes that its action, based on the expansion of the powder gases, gives better results than the purely mechanical device of the Maxim.

The fire of a machine gun cannot be continuous owing to overheating and to the inevitable mechanical breakdowns; the use of machine guns in pairs is therefore recommended, so that one can be cleaned, repaired, and cooled whilst the other is in action.

All countries have now adopted the machine gun in one form or another, and it is interesting to note how it has been employed in the various wars of recent years. Captain Mairetet praises the good use to which the Maxims were put by the English at Omdurman and in the Matabele War; he adds that the conditions in South Africa were not similar, and that the English failed to realise the true rôle of machine guns on the field of battle. Spion-Kop is cited as an example of an engagement at which the use of machine guns might have reversed the fate of the day. Examples may change, but the lesson remains the same.

Machine guns in a prepared defensive position are of enormous value, and a new factor has also come into being, namely, the great strength which may be derived from their presence and their mobility in holding conquered positions on the field of battle. In the China War of 1900 at Tien-tsin, the Chinese, armed with machine guns, were easily defeated, proving that in no case can inefficiency in the *personnel* be compensated for by superior armament.

Again, in the Russo-Japanese War, machine guns played an important part in both armies; they were found particularly useful in assisting infantry to retain newly acquired positions, and, being light, they could be easily transferred from point to point. Their effect on the *moral* of troops was found to be very considerable, giving confidence to their own side and depressing the enemy almost as much by their never ending and strident noise as by the severe losses they at times inflicted. A Russian report, published after the war, advocates a battery of from 12 to 14 quick-firers being attached to each division; the report further emphasizes the value of machine guns in repelling counter-attacks.

Under the heading "Tactical employment," the author points out that cover sufficient for infantry is equally sufficient for machine guns; and further, that by concentration of fire machine guns can in a very short time destroy any dense formations. Machine guns cannot be used with effect against very open formations, as the results that might be obtained would be quite out of proportion to the amount of ammunition expended.

Captain Mairetet is very optimistic with regard to machine guns as opposed to cavalry; he is of opinion that in open country a battery of machine guns can boldly advance to the attack against mounted troops. He also has such confidence in the power of rapid fire that he asserts that machine guns can hold their own even without an escort in favourable country.

He arrives at the following conclusions:—Machine guns can never replace infantry, however useful an adjunct they may be. Machine guns can follow infantry in the attack, but will always be too cumbersome to accompany it.

Both in attack and in defence machine guns will generally be employed as a "defensive" arm. Machine guns, which are capable of rapid movement, may, when employed with advanced infantry, be of great value in compelling the enemy to deploy prematurely.

With a view to preventing waste of ammunition, machine guns should be kept in reserve, and only used at critical or decisive moments.

Machine guns should accompany cavalry in order to give it greater resisting power, and therefore greater independence than it has hitherto possessed.

Machine guns may be of great use as a support to artillery, as the escort, often composed of infantry, is unable to move rapidly. The guns are therefore apt to be paralysed; machine guns could move rapidly with artillery and act as a temporary support until the arrival of the infantry escort.

The writer concludes this able study by adding that the attack of a position defended by machine guns is a task in which the best infantry might fail unless the ground were exceptionally favourable; he is of opinion that, in these circumstances, the close support of artillery will, more than ever, be of vital importance to enable the infantry to advance.

Tactical Exercises with Solutions (Thèmes Tactiques). By Lieutenant-Colonel Egli of the General Staff of the Swiss Army. Translated from the German by Major Morier, Military Attaché to the French Embassy in Switzerland. 143 pp., 2 maps. 8vo. Paris, 1909. Chapelot. 2/6.

This French translation renders available the first collection of tactical problems published by a Swiss officer to a large circle of British readers. The book is of special interest, as it gives the ideas of an officer who for many years has been one of the staff of permanent instructors of a Militia Army. The orders will be found considerably longer and more detailed than those usually issued in the great continental armies. The fact that the subordinate commanders in the Swiss army are only able to give a comparatively small portion of their time to military study and training is probably accountable for the necessity of issuing orders in considerable detail.

During the later phases of the Franco-Prussian War of 1870 the same difficulty as regards the avoidance of detail in orders was experienced by General Chanzy. He found that it was impracticable, when dealing with the *mobiles*, to issue orders in the same brief and succinct form which can be adopted in the case of highly trained staffs and regular troops.

The lessons of the Russo-Japanese War (Les enseignements de la Guerre Russo-Japonaise). By Captain Fouquet. 31 pp. 8vo. Paris, 1908. Chapelot. -/6.

This little book is certainly worth perusal, for its 31 pages are full of acute observation and logical deductions. The attack of long thin lines of infantry is condemned when not sufficiently supported at the flanks. The Japanese Guards' division at the battle of Liao-Yang had begun an enveloping movement, but was compelled to retire in confusion by the attack of a Russian regiment on its unsupported flank. (The Japanese did not often make this mistake, for they generally had their reserves massed behind their flanks.) Stress is laid upon the importance of having mounted scouts with infantry who otherwise are often sadly in want of accurate information, which the Divisional Cavalry may be too weak or too busy to furnish; in European warfare cyclists would serve this purpose better. Machine guns were often invaluable, and their effect on the *moral* of troops was, during the final stages of an attack, even greater than that of guns. But—most important of all—both the Japanese and Russians abandoned the attack in long lines in favour of groups moving rapidly from cover to cover, whilst the space unoccupied by men was held far more effectively by fire. The author concludes by stating how necessary it is that the *moral* of the troops should be good, but above all that they should be commanded by efficient, enthusiastic and patriotic officers.

Encounter and Counterstroke. (Illustrated by the Campaign of Salamanca.) Lecture by Brigadier-General E. S. May, C.B., C.M.G., General Staff. 32 pp. with 2 maps. 8vo. Dublin. Headquarters Printing Office.

This is an unusually attractive piece of military writing; it gives the outline of the campaign and of the battle which closed it, brightened by local colour obtained during a recent visit to the ground, and the lessons for the future which may usefully be gathered from them.

A Staff Tour, dealing with tactics, staff, and supply duties (Eene Oefeningsreis op het gebied van Tactiek, Stafdienst en Legerverpleging). By Captains T. Muller Massis and J. Ten Bosch, of the Dutch General Staff. 132 pp. 8vo. The Hague, 1909. Belinfaute. 3/9.

This staff tour was carried out by officers of the Dutch Staff College in the province of Limburg:—The general idea is as follows. A war is imminent between a Red country whose territory corresponds with that of Germany, and a Green country whose eastern boundary corresponds with that of Belgium. A Blue country (the Netherlands) has notified both the above Powers of its intention to remain neutral. Green has replied, promising to respect Blue's neutrality; Red has sent an evasive answer.

The book consists of a narrative of events followed by an appendix containing the orders issued. Among the most interesting of the latter are those on pages 74, 75, and pages 84-89 giving the arrangements for billeting a division.

The Reality of War. By Major S. L. Murray. 118 pp. 8vo. London, 1909. Rees. 2/6.

This book is written with the two-fold object of inducing the readers of it to study the writings of Clausewitz and to give those who are too busy to study the original writings some notion of that author's leading ideas on policy and war. It commences with a short account of the life of Clausewitz with the object of showing what exceptional opportunities he had during the wars of 1793-1815 of studying in the field the methods adopted by the great commanders of that period, and of developing in a practical manner the theories he formed as a result of these experiences.

It then proceeds to show how the influence of the writings of Clausewitz has been steadily growing, and now may be said to permeate modern military and political thought in every nation with the exception of Great Britain, notwithstanding the fact that "it is admirably adapted to form a main stem in the military culture of British officers."

Major Murray next selects a few of the leading ideas from Clausewitz "On War," and concentrates his attention on impressing the soundness of them on his readers by means of numerous quotations from the original and from later authoritative writers.

Amongst the subjects selected are "Theory and Practice in War," "Public Opinion in War," "The Nature of War," and "Strategy," and these are briefly and ably dealt with from a political and military point of view.

Throughout the book Major Murray insists on the necessity of both statesmen and soldiers studying the famous work of Clausewitz "On War."

Employment of Cyclist Companies (Emploi des compagnies cyclistes). By Major L. Collyns. 60 pp., with map and appendix concerning the organization of cyclist units in Belgium. 8vo. Namur, 1909. Wesmael-Charlier. 2/-.

Major Collyns, who for a time was in command of a cyclist company, has endeavoured in this work to give, both from the lessons of the past and from his own experience, incontrovertible and solid reasons for the employment of cyclist units in war. He points out that cyclists are and must remain infantry, and that their great mobility is simply a special advantage, of which the fullest use should be made in supporting cavalry. Employed with cavalry on reconnaissance duties, the author maintains that, making the utmost use of their greater speed, they should precede and not follow the mounted arms. Support should be given by holding positions in advance of the divisional cavalry and not to its rear. A scheme illustrative of the author's theories is worked out on Belgian territory with the help of a map.

Leading of Troops (Truppenführung). By Lt.-Col. von Altrock German Army. 272 pp., including index, 3 maps, and 2 appendices. 8vo. Berlin, 1910. Mittler. 9/-.

In the preface the author describes the objects of his work:—(1) to familiarise officers with the numerous revised manuals which have appeared since the Manchurian war; and (2) to help officers in overcoming the difficulties which the adaptation to military needs of motor traffic, air-craft, telephones and wireless telegraphy has added to the study of tactics. The book contains 56 problems with solutions and, in some cases, discussions. The problems are divided into series classified as:—"The Regiment" (1 to 12); "The Brigade" (13 to 18); "The Division" (19 to 35); "The Cavalry Division" (36 to 41, and 55); "The Army Corps and Army" (42 to 54, and 56).

The problems under the heading of "The Regiment" deal with a mixed force of one to four battalions of infantry, machine-gun companies or batteries, a field artillery brigade (2 or 3 batteries) or a single battery, one or more squadrons of cavalry, detachments of engineers, ammunition columns and medical units. Most of the problems in this series refer to consecutive tactical operations, namely, marches and quartering at a distance from or near the enemy; action of a flanking detachment; an encounter action; measures after a fight; protection of a division retiring after a lost battle; retirement of the detachment itself before superior forces; action of a divisional advanced guard about to cross a river with an enemy on the far bank; flank guard to a beaten division which is threatened in flank; pursuit.

Of the six problems devoted to "The Brigade" (5 to 7 battalions with cavalry, guns, engineers, ammunition and medical details in varying proportions), three deal with the situation on one side, and three (alternate) ones with that on the other. The operations comprise:—attack and defence of communications; action of detached brigades during the forcing and defence of a passage by the respective main armies; attempt to cross a bridge held by the enemy on the part of a detachment trying to rejoin its defeated main army; defence of the above-mentioned bridge.

"The Division" deals with a continuous series of tactical operations, viz.:—a march from scattered cantonments along one road, and cantoning in vicinity of a river line which is to be defended; marches near enemy; deployment; attack; measures after a successful attack; retirement, with an enemy on a flank; occupation of a rear-guard position; rear-guard action as part of an army corps, the commander of which falls in the fight and is replaced by the general officer commanding the division under consideration. Problems 31, 32 and 33, 34 are alternative, and deal with the operations of detachments from forces attempting and threatening a river crossing.

"The Cavalry Division" deals with:—screening and reconnoitring in front of an army of several corps; action in face of strong forces of all arms; participation in successful and unsuccessful actions, and (penultimate problem) action against an enemy defending a prepared position.

"Army Corps and Army" considers marches close to and at a distance from the enemy, and in one or several columns; pursuit; covering of retreat; attack on flank of a large force which is already engaged; the defence and attack of a prepared position, under which are given a consecutive series of problems for an attacking and a defending force respectively.

The maps include a 1/500,000 general map of the Franco-German frontier districts, 1/100,000 tactical map of the country between the rivers Saar and Moselle and west of the latter, 1/25,000 map of a prepared position showing defences. The two appendices give sixteen "orders of battle," numbered and referred to in the text after the "Special Idea" in each problem.

The book differs from Griepenkerl's work in that constant reference is made in the solutions to paragraphs in the various German manuals dealing with the points under discussion, and that the solutions and discussions (where added) are more tersely worded. The following are some noticeable points in them:—In march orders a "leader" of the main body is detailed, the order of march being given, notwithstanding, as with us. In operation orders, after the heading, the subject (attack, pursuit, etc.), is added in brackets; explanations (*Erläuterungen*), and special instructions (*besondere Anordnungen*) issued with operation orders (in appendix form) deal with ammunition, supply and medical questions. Tactical dispositions only are given in operation orders. Second line transport remains halted at the end of a march some distance in rear of the cantonment area; troops are informed in orders of its whereabouts, and directed to bring it up independently by units.

Operation orders mention that baggage will follow "in order of march of units," a point which is laid down as the normal procedure in our Field Service Regulations, Part I. To troops in scattered billets, short orders detailing starting time, route, destination are telephoned, wired or sent by orderly. March orders proper are often not issued until troops have started. The author points out that in such circumstances a "starting-point" cannot be fixed, and troops must be drawn up by groups on either side of the route to be taken.

An appendix to one set of divisional march orders contains special instructions for a long halt; hours and duration of halt for each column are given as well as the time when the leading infantry is to pass specified points after resuming the march. Supply wagons (marching by brigades at the head of second line transport) are ordered to fill up field kitchens after the halt, and then fall to the rear. Movements of field kitchens are always mentioned. "Double column of route," *i.e.*, infantry on one side of the road and mounted troops or vehicles alongside them, is ordered for certain occasions. When dealing with attack, the author gives warning against the tendency to consider unduly strategical ends in a tactical operation, *e.g.*, instead of attacking with a view to driving an enemy in a certain direction, the best ground to attack over should be chosen. In a fight, the commander's headquarters should be at a road junction, and means of rapid communication must be established at once if he leaves his headquarters.

As regards reconnaissance:—Where cavalry is under the advanced guard commander, orders for the force should lay down nothing as to patrolling; if, however, the cavalry is acting directly under the officer commanding the force, all instructions as to its duties should go into orders.

Constant reference is made in the book to communication officers (*Nachrichten Offiziers*) sent from one large unit to another. These officers report direct to the authority who dispatched them.

The discussions on the cavalry division impress the necessity of cavalry sacrificing itself for the army at times; of its not being drawn aside from its mission by subsidiary enterprises, and of not quitting the zone allotted to it by army headquarters without strong reasons.

Cavalry reconnoitring detachments must have full details as to the situation, and supporting cavalry bodies should not follow them too closely. Reconnoitring

cavalry should not fight superior forces, its rôle being to obtain and transmit news. Bodies of cavalry should often gallop forward, "Boer fashion," to fire from favourable positions. Orders to reconnoitring cavalry are accompanied by instructions giving details as to routes, reconnoitring area, destruction of communications, treatment of hostile inhabitants and (in tabular form) time, and place of start, establishment of signalling stations, designation of reconnoitring bodies.

In a discussion on fortified positions, the employment of inhabitants on the actual defences is deprecated; there is no objection to their being used on screens or on dummy works.

For howitzers in the defence an advanced position is recommended, whence they must subsequently retire under cover of darkness or of fire from other batteries.

In artillery orders for the attack on a prepared position a *précis* of information obtained by patrols and observers in balloons is distributed to regiments and howitzer brigades.

The destruction of obstacles is to be effected by joint action on the part of artillery and engineer detachments.

The book contains useful hints for the preparation of plans of billets, reports, and rapid sketches; it is noteworthy that shading is recommended.

A standard form for "Appreciations" is condemned.

As an instructional work on the applied method of tactics the book appears admirable.

The French Infantry in Face of the German Army (L'Infanterie Française en face de l'Armée Allemande). By Captain Alléhaut. 86 pp. 8vo. Paris, 1909. Berger-Levrault. 1/6.

This book gives an interesting comparison of French and German tactical methods. The author—an infantryman and a p.s.c. officer—begins by discussing the tactics of the three arms combined and shows how the Germans, with their cult of the offensive, their preconceived plans, and enveloping movements with widely scattered columns will be met by the French with their strong advanced guard, detachments of all arms on the flanks, and main body kept well in hand. The French may generally expect that the German frontal attack will not be very serious.

The German cavalry is next dealt with; the author notices that there is a tendency in Germany to make cavalry mounted infantry. He is very much opposed to the cavalry, during a battle, making turning movements or raids on the lines of communication, since in his opinion, if properly handled, it may still find its opportunity against infantry when the latter is striving to make progress in the attack. On the other hand, no infantry need ever fear cavalry on foot, for a threat to interpose between the troopers and their horses will always have its effect.

The German infantry fire tactics are explained and compared with the French regulations.

Finally the artillery is examined. The author thinks that the German gun is not so good as the French, nor are the Germans so quick at ranging as their neighbours. French infantry must expect to have most of the attention of the hostile artillery, and the latter's fire tactics are carefully considered in order to discover the best method of procedure in the infantry attack. A slight lateral displacement of some 50 yards will often delay efficient fire. Small and narrow columns are advocated, with intervals of about 30 yards between them and distances of at least 150 yards between successive lines. It is suggested that the columns should not move on an equal front.

Night Combats and Night Manœuvres (Nacht Gefechte und Nacht Übungen). By Lieutenant-Colonel Balck, German Infantry. 302 pp., with 22 diagrams in text and 3 appendices. 8vo. Berlin, 1910. Eisenschmidt. 8/-.

The book commences with a historical review of night operations with descriptions of some typical instances prior to the Russo-Japanese War, and a summary of the regulations of the British and other Armies on the subject. The war in Manchuria, 1904-5, is next dealt with. The opinions of the Russian and Japanese staffs are stated to be as follows:—"General Kuropatkin holds that the best means of meeting night attacks is to keep the troops nearest to the enemy fresh by frequently relieving them. He is averse from night attacks on the large scale. On the other side, the Japanese Staff lay down that the advance is to be continued systematically by day and night, entrenching the ground gained, till on the third night the infantry arrive within 300 or 400 yards of the position. Three or four sham attacks are to be made, and the real night attack is then to be delivered."

The third portion of the book deals with night operations in field and fortress warfare, with historical examples. Colonel Balck pleads for the more careful training of troops in night work; his views on this subject are briefly as follows:—

"Nowadays night training is no less necessary than day training.

"In Japan, since the war, night manœuvres have been constantly carried out. The Japanese recruits go through a 12 weeks' course of training, of which the last fortnight is devoted to night work.

"Night manœuvres must be carried out on dark nights and under a full moon, in summer and when the ground is covered with snow.

"Attention must be devoted to maintaining direction by the stars. Little time should be devoted to individual instruction, and manœuvres with formed bodies should be commenced as early as possible, first by companies and then by battalions and brigades. Particular attention is to be devoted to night outposts, sentries, and patrols.

"Night rides should be carried out, preferably in the dark winter months. In these, troops must be posted to represent the enemy. Maps for these rides must

be specially prepared, the route being marked by a broad black line. Wind-proof matches are to be used for reading maps.

"The winter campaign of 1807 forms a good basis for night schemes.

"If two opponents meet, and one is thoroughly trained in night work while the other is not, the first will have an immense advantage."

The work is written with Colonel Balck's usual clearness and directness.

Points in Military Geography (Apuntes de Geografia Militar). By Major Montero. 197 pp., 17 maps (bound separately from letterpress). 8vo. Toledo, 1909. Maria Cristina Press. 17/-.

This is a handbook used at the Spanish Infantry School, and contains short studies of the frontiers of various European nations, the author's object being to help subaltern officers to form a general idea of the strategical importance of frontiers, and of the principles on which the schemes for their defence are based. The various French frontiers are considered in some detail: slight sketches are also given of the frontiers of England, Germany, Switzerland, Belgium, Italy, Austria, Russia, and the Balkan States. In so small a volume it is impossible to enter into much detail, but a considerable amount of useful information is nevertheless to be obtained from Major Montero's little book.

The Tactics of the Three Arms (La Tattica delle Tre Armi). By Captain Luigi Giannitrapani. 165 pp. 9vo. Rome, 1910. Voghera. 2/6.

This book is a reprint of a number of articles which appeared in the "Rivista d'Artigliera e Genio." Their object is to show how the tactics of the future are likely to be affected by the lessons of recent campaigns. A brief historical retrospect is first made of the chief lessons of the Franco-Prussian, Russo-Turkish, and Anglo-Boer campaigns. The Russo-Japanese campaign is then treated in considerable detail, the questions of machine guns, of heavy artillery, and of quick-firing field guns being especially considered. In the second part the author devotes 50 pages to the probable tactics of the future.

In the first portion of the book, which is chiefly devoted to minor tactics, there is nothing remarkably new, but the deductions from the wars in South Africa and Manchuria are very clear and well-arranged, while there are ten interesting pages on the different methods of employing Q.F. artillery in France and Germany respectively.

The author emphasizes the fact that many of the incidents in recent campaigns were due to abnormal local conditions, which would be impossible in a war on the continent of Europe. He then proceeds to describe the various phases of an action in the next "normal" war. The following are some of the more interesting conclusions arrived at:—(*a*) The great principles of tactics remain unchanged, but it is doubtful if the pure offensive still maintains its superiority over the defensive-offensive. (*b*) In the attack, successive waves of infantry only increase the depth of the target without increasing the fire power of the infantry; consequently, supports should not be employed, but two out of the three battalions in a regiment should be deployed as a firing line, the third (reserve) battalion being sent forward between 1,000 and 400 yards from the point of assault. (*c*) Actions will be slower, and the fronts occupied will tend to increase in the future. (*d*) All units have now an increased reserve of destructive power; they can utilize this to repel attack or counter-attack, consequently it will be unnecessary to lock up so many troops in local reserve, and in future these may be employed in the decisive attack.

No mention is made of the method of employing a general reserve or of delivering a decisive counter-attack.

TRAVEL AND TOPOGRAPHICAL.

The German Colonial Empire (Das Deutsche Kolonialreich). Vol. I. By Dr. Hans Meyer. 650 pp., with numerous illustrations and maps. 8vo. Leipzig and Vienna, 1909. Verlag des Bibliographischen Instituts. 15/-.

This work, in which Dr. Meyer is being assisted by a number of scientific men, is a geographical treatise on the German Protectorates. Volume I. deals with German East Africa and the Cameroons, and gives a comprehensive view of the history of each Protectorate, with details as regards climate, vegetation, population and geography. It will be found useful as a book of reference.

Volume II. has not yet been published.

High Albania. By M. E. Durham. 348 pp., with illustrations and a map. 8vo. London, 1909. Arnold. 14/-.

This book gives an account of journeys made in 1908 by the authoress in Northern Albania, a land very little known to English travellers. Interesting information is given regarding the national aspirations, the manners and customs of the population.

The account of the effect of the proclamation of the Constitution in Turkey on the Northern Albanians is instructive, while the experiences of the authoress at Scutari at that time are very graphically told.

The Gateway to the Sahara. By C. Wellington Furlong, F.R.G.S. 306 pp., 3 maps, and numerous illustrations. 8vo. London, 1909. Chapman and Hall. 12/6.

In this book the author, an American traveller, has given his impressions of the Turkish province of Tripoli in Africa. He terms it the "Gateway to the Sahara," inasmuch as it is from here that the caravan routes lead to the great marts of the Soudan—to Timbuktu and Hauseland in the west, to Bornu and the Baghermi country round Lake Chad, and to Darfur and Kordofan in the east.

Mr. Furlong gives a vivid description of the customs, industries and incidents of life of the people who form the population of the town of Tripoli and the adjoining oases and tablelands. He also tells of the methods and mode of journeying of one of the great caravans proceeding to the interior, which he obtained permission to accompany for a portion of the route.

There is not perhaps much of geographical detail in the book, but the illustrations are extremely good.

The Civilizations of Northern Africa (Les Civilisations de l'Afrique du Nord). By Victor Piquet. 392 pp. 8vo. Paris, 1909. Armand Colin. 4/-.

The author has written this book with a view to correcting the impression prevalent in France that Algeria Tunis and Marocco have always been barbaric and wild.

The first chapter deals with the early inhabitants and shows how even in the 14th century B.C. a comparatively advanced civilization existed in these countries. The Carthaginian and Roman periods are only summarized, but a full description, based on the accounts of Arabic writers, is given of the Arabian, Berber, and Turkish empires which have been successively established in Northern Africa. The book is useful to those interested in the Maroccan question.

Guide to Turkistan and the Tashkent and Central Asian Railways (Путеводитель по Туркестану, &c.). Compiled from official sources by A. I. Dmetriev-Mamonov. 4th edition. 478 pp., with numerous illustrations and a map of Turkistan. 8vo. Moscow, 1909. Bezobrazov. 10/5.

This is a new edition of a work originally published in 1903. The chapter on the Orenburg-Taskent Railway is, however, the only one which has been re-written. It has been expanded from 13 pages to 40, and a note on the naphtha industry in Ferghana has been added.

The time tables and information concerning routes in Central Asia, which appeared as an appendix to the 1903 edition, have been omitted in the present issue.

The remainder of the book is simply a reprint, and the information it contains is consequently somewhat out of date.

A German Staff Officer in India. By Count Hans von Koenigsmarck. 340 pp., with numerous illustrations and an index. 8vo. London, 1910. Kegan Paul, Trench, Trübner and Co., Ltd. 10/6.

The translation of the book, which originally appeared in German, contains a series of vigorously drawn word-pictures of the various places visited by the author. The scenes depicted include many of the most characteristic spots of India, and convey a realistic idea of the country and the manners and customs of the population, official and non-official. To the military reader the author's impressions of the north-west frontier, the British and Indian soldier, and the life led by the Anglo-Indian official in India, will be of most interest. Without any pretensions to being a book of reference with regard to the subjects dealt with, the volume contains a considerable amount of useful information conveyed in an attractive form. The attitude of the author throughout the book is that of an enthusiastic admirer and, at the same time, an intelligent critic of the work undertaken by Great Britain in India.

On New Tracks in Sumatra (Auf neuen Wegen durch Sumatra). By M. Moszkowski. 328 pp., with 1 map. 8vo. Berlin, 1909. Dietrich Reimer. 14/-.

This book is an account of the author's travels in eastern and central Sumatra. It is illustrated by numerous photographs, and contains chapters on the history, religions, and characteristics of the native races.

Cairo—Baghdad—Constantinople (Kairo—Bagdad—Konstantinopel). By Lieutenant-Genéral E. von Hoffmeister. 255 pp., with 10 full-page illustrations and others in the text. 4to. Leipzig and Berlin, 1909. B. G. Teubner. 8/-.

In the four months' journey General v. Hoffmeister travelled from Cairo to Damascus, thence due east by Palmyra to the Euphrates, and down to Baghdad. He returned from the latter place by the Tigris, struck across to Bulgurl and there took the train home.

He has much to say descriptive of the regions visited, and also records his views as to the political conditions appertaining to the different localities and districts. The value of these views at the present moment must, however, be somewhat discounted, as the journey was carried out two years ago.

As regards Egypt, praise is accorded to the British administration, and the hope is expressed that "the calm and practical sense of the English people, and the steadfastness of their policy both in Egypt and India, will obtain just results, even in face of the violent and dangerous forces which are now at work under an apparently calm surface."

A whole chapter is devoted to the Baghdad Railway. In this the author gives his reason for thinking that the line should be continued *viâ* Alexandretta-Aleppo to Mosul, there crossing the Tigris to Kerkuk and Baghdad, and following the left bank of the river to Basra.

The map provided shows in a clear form the route traversed by General v. Hoffmeister.

The book is well got up, and the illustrations, from photographs by the author, excellent.

To Abyssinia through an Unknown Land. By Captain C. H. Stigand, F.R.G.S., F.Z.S., Royal West Kent Regiment. 346 pp., with illustrations and 2 maps. 8vo. London, 1910. Seeley and Co. 16/-.

Captain Stigand in this book gives an account of a journey through British East Africa to Lake Rudolph, and thence to Addis Abbaba, the capital of Menelik's kingdom.

Leaving the Uganda rail at Gilgil, the expedition marched to Rumuruti, on the edge of the Laikipia Plain country, where the administrated part of British East African territory was left. A route due north was then taken to Rendile, thence N.E., skirting the Boran country and back west to Lake Rudolph. This portion of the journey, through tracts of our territory but little known, occupies the first half of the book.

As regards the second portion of his journey, *i.e.*, from Lake Rudolph to Addis Abbaba, Captain Stigand's route lay to a great extent through the country east of Lakes Margherita and Zwai, surveyed in the same year by Major Gwynn's Anglo-Abyssinian Boundary Commission on its return from demarcating the southern boundary. Captain Stigand's remarks, added to Major Gwynn's work, completes very considerably our knowledge regarding the localities in question. The remarks and observations on the methods of Abyssinian administration are interesting, and the establishment of telephonic communication in Abyssinia, as far south as Dalbo, is noteworthy.

The Story of Majorca and Minorca. By Sir Clements R. Markham, K.C.B. 309 pp., with 2 maps. 8vo. London, 1908. Smith Elder. 7/6.

The history of the two islands is traced up to the beginning of the 19th Century. The latter half of the book contains an interesting account of the three British occupations of Minorca in the 18th Century, and shows the important influence of Port Mahon on naval strategy in the Mediterranean.

Zambezia. By R. C. F. Maugham, British Consul for Portuguese East Africa. With 1 map and numerous photographs. 8vo. London, 1910. John Murray. 16/-.

This book forms a companion volume to the author's *Portuguese East Africa*. Mr. Maugham, who has been fifteen years in the country, has not only acquired a knowledge of it that is encyclopædic, but has the power of imparting that knowledge in a most readable form. The country described is that of the Zambezi valley from the sea to the town of Tete. Its history, past and present systems of administration, commercial possibilities, flora and zoology, are in turn described, while three most interesting chapters are devoted to an account of the customs and characteristics of the native tribes.

Emphasis is laid on the great agricultural potentialities of the country, the slowness of its progress being attributed to: (*a*) the existence of under-capitalised land companies who take up more land than it is possible for them to develop; (*b*) the lack of communications: almost the only means of communication is by the uncertain and shallow waters of the Zambesi; roads and railways are practically non-existent; (*c*) the difficulties of the native labour question.

The present-day Portuguese officials are reported to be of a more energetic and resourceful type than their predecessors, and Mr. Maugham considers that if they are given support the country has a great future.

MISCELLANEOUS.

Some Questions of the Moment (Quelques questions d'Actualité). By General Langlois. 184 pp. 8vo. Paris, 1910. Berger-Levrault. 1/8.

This is a reprint of various articles which have appeared in the papers *L'Opinion* and *Le Temps*. The well-known author discusses a number of the French military questions of the day, but the disadvantages of such a reprint are that some of the questions are settled almost as soon as the book is published. The article on the proposed "Suppression of Courts-Martial" is perhaps the most interesting.

Practical Guide to Meat Inspection (Guide Pratique de l'Inspection des Viandes). By MM. Monier and E. Huon. 163 pp. 8vo. Paris, 1909. Lavauzelle. 3/-.

This is a very useful work, which deals clearly and comprehensively with the subject.

It is divided into five chapters. The first deals with "Slaughter animals in their live state"; Chapter II., "The consideration of slaughtered meat"; Chapter III., "The consideration of diseased meat"; Chapter IV., "Fraudulent practices and tricks employed in the trade in connection with meat"; and Chapter V., "The products of he pork-butcher—their preparation, and various frauds, &c., employed in connection therewith."

A Guide to Officers in Buying a Horse (Pour aller loin). By Commandant d'Huningue. 34 pp. 8vo. Paris, 1908. Chapelot. -/10.

This useful little guide is dedicated by Commandant d'Huningue to Staff Officers; much information is given in a concise and practical form with regard to the points to be looked for when purchasing a horse for military purposes.

Frauds in the Live Cattle and Meat Trade with regard to the French Army (Des fraudes dans l'armée et dans le commerce du bétail). By M. Raynal, French Military Veterinary Officer. 76 pp. 8vo. Paris, 1909. Lavauzelle. 1/8.

This work is a valuable addition to the literature dealing with the inspection and purchase of live cattle and meat, and contains much useful information.

It consists of a Preface written by Dr. Pages, and an Introduction, three chapters and an Appendix by M. Raynal himself.

The Appendix contains some useful items of information regarding the army ration and its preparation.

The author is of opinion that the ration is in itself sufficient and suitable, but that much is to be desired as regards its preparation and cooking.

He states that too much attention is paid to the quantity and quality of the ration at the expense of its preparation, which process has so great an influence on its digestion and therefore on the health of the troops.

He states that although all the meat is nearly always eaten, large quantities of vegetables and extras are left on the plates and wasted, and that these "scraps" support a considerable following of beggars, tramps and unemployed at every garrison town.

This he says is entirely due to bad cooking. The cooks are unpopular and distrusted by the men, and have not even an elementary knowledge of their work.

He recommends the employment of professional cooks with a good knowledge of their work, and with adequate and clean clothing, and the establishment of a school of cookery at every garrison, from which they would be drafted to every company, and graded as other artificers.

It is stated, however, that some improvement has latterly become noticeable in messing, and that greater interest in it is taken by officers, but that much still remains to be done.

(To be continued).

JOURNAL

OF THE

Royal United Service Institution,

WHITEHALL, S.W.

PUBLISHED UNDER THE AUTHORITY OF THE COUNCIL.

Authors alone are responsible for the contents of their respective Papers.

VOL. LIV.

JANUARY TO JUNE, 1910.

LONDON:
J. J. KELIHER & CO., LIMITED, 33, KING WILLIAM STREET, E.C.
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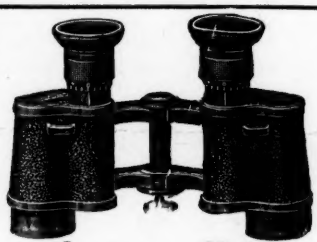

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